XO-1001

AEP Model

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TIMER DECK RECEIVER

SPECIFICATIONS

FM tuner section

Tuning range	87.5 MHz-108 MHz
Antenna terminal	75 ohms, unbalanced
Intermediate frequency	10.7 MHz
Sensitivity at 46 dB quieting (40 kHz deviation)	4.5 μV (mono) 45 μV (stereo)
Usable sensitivity	1.7 μV (S/N = 26 dB, 40 kHz deviation) 11.2 dBf, 2 μV (IHF)
Signal-to-noise ratio (40 kHz deviation)	77 dB (mono), 70 dB (stereo)
Harmonic distortion (40 kHz deviation)	0.15% (mono), 0.25% (stereo) at 1 kHz
IM distortion (40 kHz deviation)	0.15% (mono), 0.25% (stereo)
Separation	45 dB at 1 kHz
Frequency response	30 Hz-15 kHz $^{+0.5}_{-2}$ dB
Selectivity	60 dB at 300 kHz
Capture ratio	1.0 dB
AM suppression ratio	54 dB

AM tuner section

Tuning range	522-1,602 kHz
Antenna	Ferrite-bar antenna External antenna terminal
Intermediate frequency	450 kHz
Usable sensitivity	46 dB/m, ferrite-bar antenna (at 999 kHz) 100 μV, external antenna (at 999 kHz)
Signal-to-noise ratio	55 dB
Harmonic distortion	0.3%
Selectivity	50 dB (9 kHz)
Image response ratio	45 dB (at 999 kHz)

— Continued on page 2 —

0 dB = 0.775 V (AF)
$\left.\begin{array}{l}0\text{ dB} = 1\ \mu\text{V}\\ 0\text{ dB/m} = 1\ \mu\text{V/m}\end{array}\right\}$ (RF)

Tape Transport Mechanism	TCM-110V8

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MICROFILM

SONY®

SERVICE MANUAL

Amplifier section

Continuous RMS power output (Less than 0.1% THD, both channels driven simultaneously)	At 1 kHz
	40 + 40 watts (8 ohms)
Harmonic distortion	Less than 0.1% at rated output
Frequency response	PHONO: RIAA equalization curve ±1.0 dB
	CD/AUX: 20 Hz - 40 kHz $^{+0}_{-3.0}$ dB
Inputs	PHONO
	Sensitivity 2.0 mV
	Impedance 47 k ohms
	CD/AUX
	Sensitivity 150 mV
	Impedance 47 k ohms
Outputs	REC OUT
	Voltage 150 mV
	Impedance 4.7 k ohms
	TUNER OUTPUT
	Voltage 150 mV
	Impedance 4.7 k ohms
	TAPE OUTPUT
	Voltage 140 mV
	Impedance 4.7 k ohms
	SPEAKER
	Accepts speakers of 8 - 16 ohms.
	HEADPHONES
	Accepts low and high impedance headphones.
Tone controls	BASS
	±10 dB at 100 Hz (turnover freq. 500 Hz)
	TREBLE
	±10 dB at 10 kHz (turnover freq. 2 kHz)
Loudness	+6 dB at 100 Hz
	+3 dB at 10 kHz

Cassette deck section

Recording system	4-track 2-channel stereo
Fast-forward and rewind time	Approx. 90 sec. (with C-60 cassette)
Bias frequency	105 kHz

Signal-to-noise ratio (NAB, at peak level)

Cassette / Dolby NR switch	OFF	ON
TYPE IV (Sony METALLIC)	58 dB	65 dB
TYPE III (Sony FeCr)	58 dB	65 dB
TYPE II (Sony CD-α)	56 dB	63 dB
TYPE I (Sony BHF)	54 dB	61 dB

Frequency response	DOLBY NR OFF
	• With TYPE IV cassette (Sony METALLIC)
	30 - 17,000 Hz
	30 - 15,000 Hz (±3 dB)
	30 - 15,000 Hz (DIN)
	• With TYPE III cassette (Sony FeCr)
	40 - 16,000 Hz
	40 - 15,000 Hz (±3 dB)
	40 - 15,000 Hz (DIN)
	• With TYPE II cassette (Sony CD-α)
	40 - 16,000 Hz
	40 - 15,000 Hz (±3 dB)
	40 - 15,000 Hz (DIN)
	• With TYPE I cassette (Sony BHF)
	40 - 14,000 Hz
	40 - 13,000 Hz (DIN)
Wow and flutter	0.05% WRMS (NAB)
	±0.07% (DIN)

Timer section

Clock	Quartz-locked
Time display	12-hour system
Control time	24-hour cycle
Time accuracy	±15 seconds/month
Timer setting	Up to two on/off programs a day, day setting and every-week repeat are possible with an accuracy measured in minutes.
Power backup duration	30 minutes with the built-in nickel-cadmium battery (charged at least 48 hours)

FEATURES

A multi-function timer is a very useful unit but its setting has been considered rather complicated. To simplify its use, the XO-1001 has a bar code system with specially-designed bar codes and bar code reader for clock and timer setting. Just read the desired codes on the bar code sheet following the diagram, and the setting is done. As you read the codes, you can know what you have set by checking the display panel of the XO-1001.
Its main features are:

Receiver section

- The high-power amplifier reproduces dynamic sound with high fidelity.
- The quartz-locked digital synthesizer system allows accurate and stable tuning.
- Quick station selection is possible with the memory preset tuning system, which can memorize 7 FM and 7 AM stations.
- The tuner output jacks and tape output jacks always supply signals from the tuner and the cassette deck.

Cassette deck section

- The S&F (Sendust and Ferrite) record/playback head provides a wider dynamic range and a more extended frequency response.
- The automatic tape select system detects the type of tape inserted and adjust the deck to attain its optimum recording and playback characteristics.
- The digital linear counter allows you to index your tapes and provides a guide to how much recording time is left.
- The AMS (Automatic Music Sensor) and Memory functions allow you to locate a desired point on a tape easily.
- The peak program meters follow the transient peaks of the music and make it easy to set critical recording levels precisely.

Timer section

- Clock and timer settings can be easily done using the bar code sheet and bar code reader, even while you are recording or listening to another program you like.
- Two-event weekly timer make possible two paired turn-on/off operations on any particular day, on several days or on every day of the week.
- The sleep timer allows you to fall asleep listening to music, knowing the power will be turned off automatically in 60 minutes.

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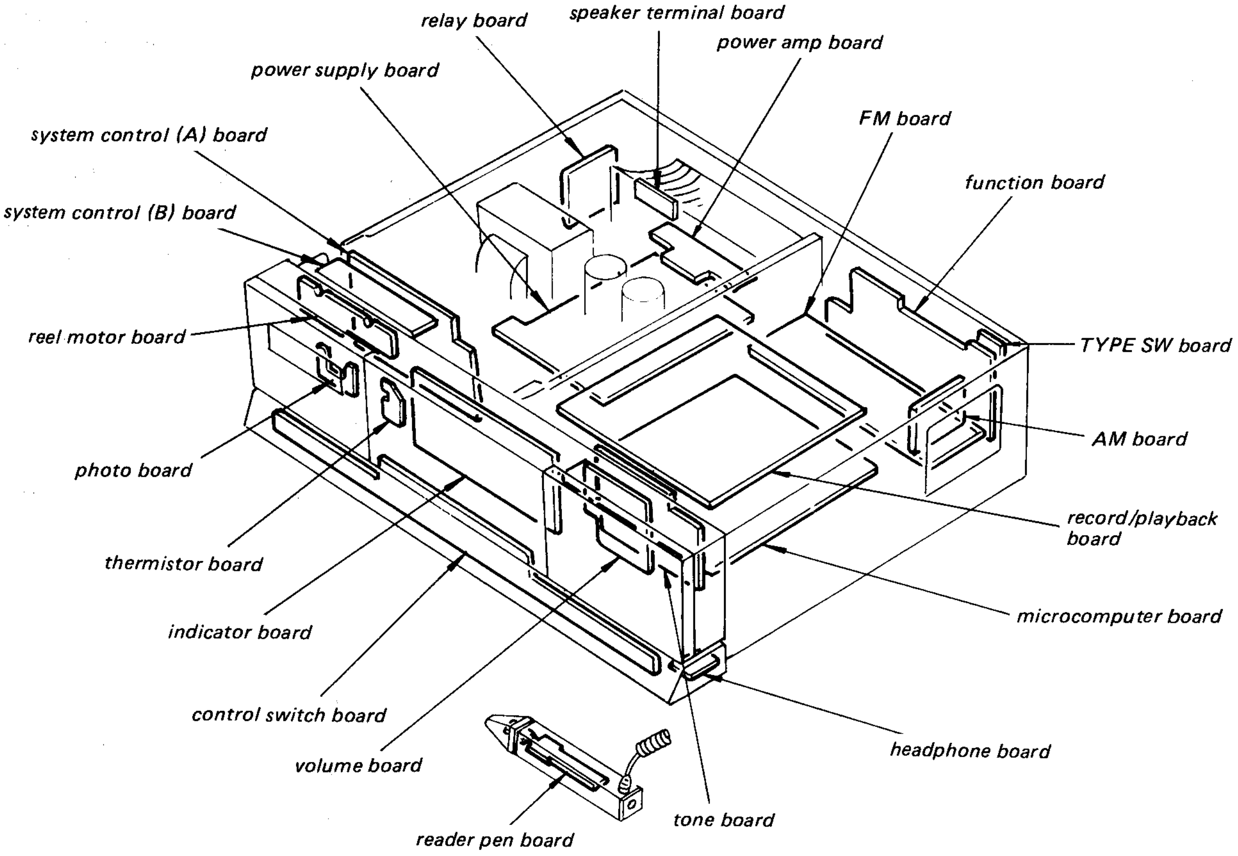
CIRCUIT BOARD LOCATION


relay board
speaker terminal board
power amp board
power supply board
system control (A) board
FM board
function board
system control (B) board
reel motor board
TYPE SW board
AM board
photo board
record/playback board
thermistor board
microcomputer board
indicator board
control switch board
headphone board
volume board
tone board
reader pen board

NOTES ON REPAIR

The microcomputer and display in this set operates off the T701 voltage supply even when the POWER ON/STAND BY key on the panel is OFF, when connected to AC power supply.

Further, even when the AC power supply is disconnected, the back-up battery provides MEMORY maintenance.

Please observe the following precautions:

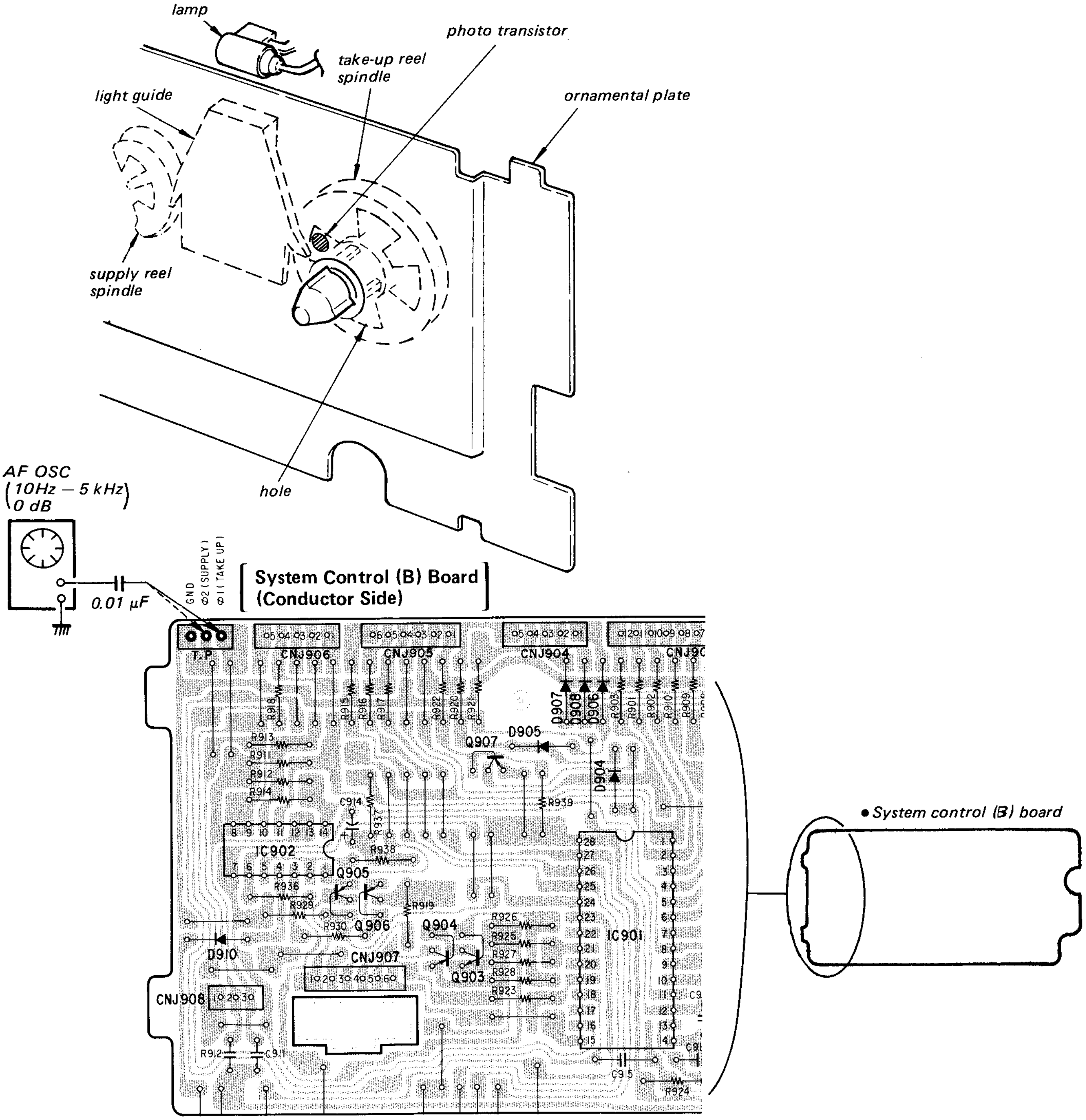
1. DO NOT short the pattern, etc. even when the POWER ON/STAND BY key is OFF if the AC plug is connected to AC power supply.
2. When replacing ICs and other parts, BE SURE to disconnect the AC plug and back-up battery lead wire (connector).
   When power is cut by disconnecting the back-up battery, all setting content is erased, and initial state results.

SERVICING NOTE

Shut-Off Detection and Precaution On Repairing

In this set, the shut-off detection is made optically. The take-up reel spindle has the four holes. The light of the lamp received by the light guide is intermittently applied to the photo transistor by means of the rotaion of the reel spindle. The pulse generated by the photo transistors Q901 and Q911 is amplified by IC902 and is fed to the mechanism control IC901 and the system control IC352.

Accordingly, when it is necessary to repair the unit after removing the ornamental plate, temporarily connect an af oscillator to each input terminal of IC902 (test point (T-P) terminal ϕ 1 and ϕ 2 on system control (B).) as shown below, so as not to operate the shut-off mechanism.


lamp
photo transistor
take-up reel spindle
light guide
ornamental plate
supply reel spindle
hole
AF OSC
(10Hz – 5 kHz)
(0 dB)
0.01 μF
GND
Φ2 (SUPPLY)
Φ1 (TAKE UP)
System Control (B) Board
(Conductor Side)
T.P
CNJ906
CNJ905
CNJ904
CNJ907
CNJ908
IC902
IC901
Q903
Q904
Q905
Q906
Q907
D904
D905
D906
D907
D908
D910
R911
R912
R913
R914
R915
R916
R917
R918
R919
R920
R921
R922
R923
R924
R925
R926
R927
R928
R929
R930
R936
R937
R938
R939
C911
C914
C915
• System control (B) board

Handling Precautions for Schottky-barrier Diodes
(11DQ03)

The Schottky-barrier diode has the following features.

- Switching period of time is short.
- Compared as the structure of PN-junction diode, either of the electrodes consists of the metal. For this reason, the rising voltage and its series resistance are low. On the contrary, the static voltage present on clothes and the human body will be enough to cause a breakdown of the insulating layer when handling the diodes.
  The following precautions should be taken while handling these diode.
  (Particular care should be taken under conditions of low humidity.)

Precautions in Replacing Schottky-barrier Diodes

1. Store new diode by wrapping it in aluminum foil, so that the both leads are at the same potential. (The diode should be stored in that manner until mounted on the circuit board.)

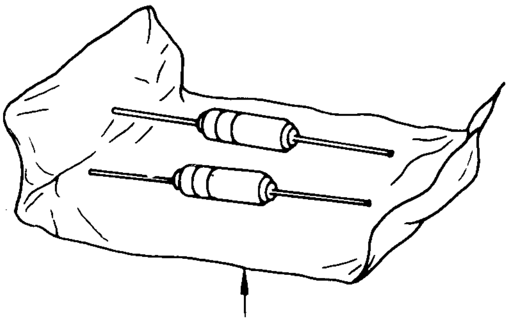


Fig. A

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. B. If there is a leakage path, use some other soldering iron.

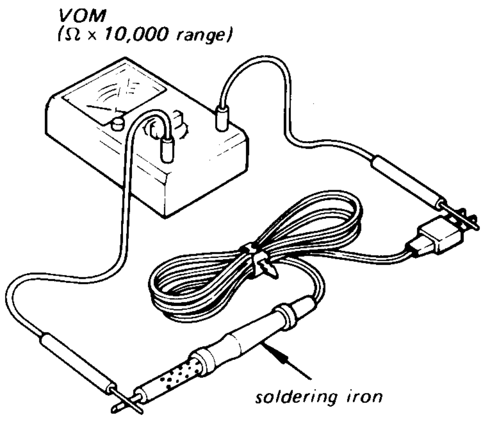


Fig. B

3. Equalize any potential difference between clothes, the tools in use, the work bench, the pattern of PC board where the diode is to be mounted and the aluminum foil packing the diode by touching them all in succession with the hands, a conductive wire or tool.
4. The following is effective methods for handling diode that remove the potential difference between the both leads of the diode.

   - Take a short length of fine bare wire and wind it around the leads of the diode so that it shorts the both leads of the diode, while it is still in the urethanepolyester cushion or aluminum foil. This ensures that the both leads are at the same potential.

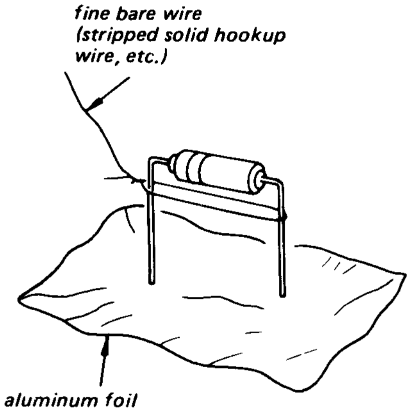


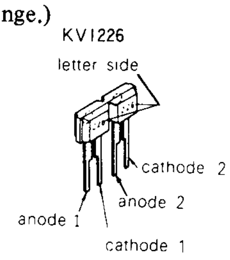
Fig. C

5. Method of Mounting
   Insert the diode on the PC board and solder both leads while the bare shorting wire is still wound around it. Remove the bare shorting wire only after the both leads have been soldered.

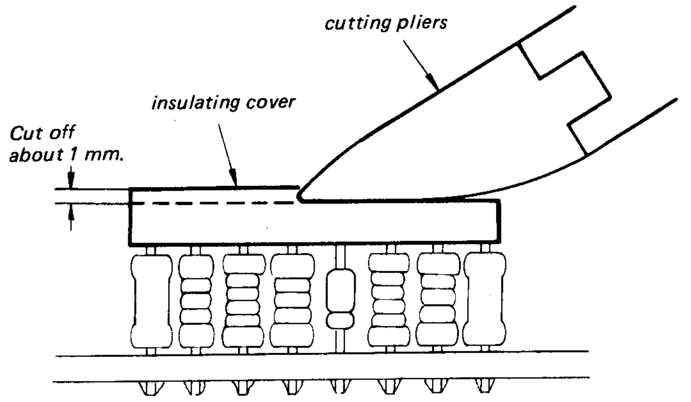
Handling Precautions for Variable Capacitance Diod D51 (KV1226) for AM

Variable capacitance diode D51 is a pair. In this set, D51 is used separately – one for the antenna tuning circuit and the other for OSC circuit.

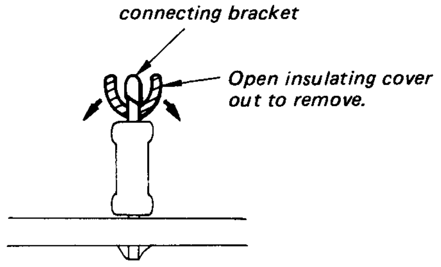
When replacing this capacitance diode, be sure to replace both of them. (to avoid causing tracking slip and sensitivity change.)

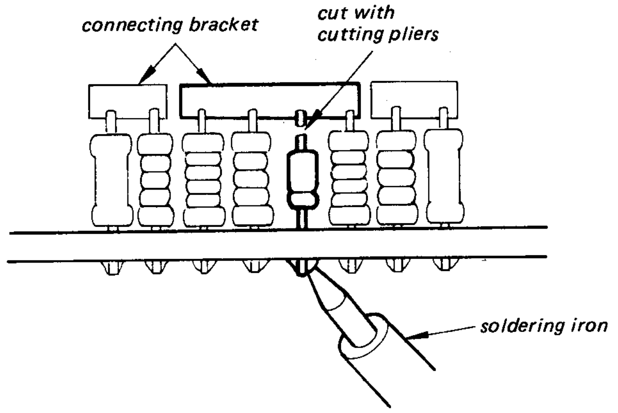


REPAIR METHOD FOR HYBRID CIRCUIT BLOCK

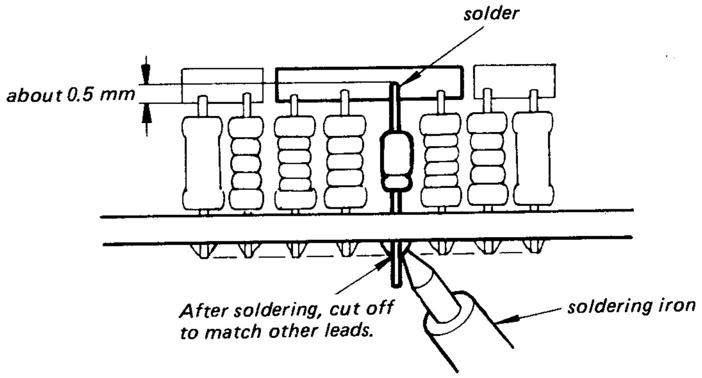

cutting pliers
insulating cover
Cut off
about 1 mm.

Using a cutting pliers, cut off the upper portion of the insulating cover about 1 mm, exposing the top of the connecting brackets.

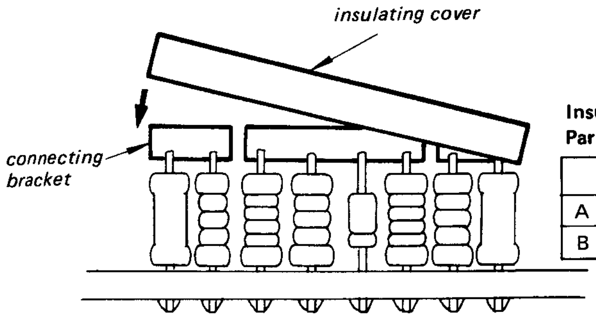

connecting bracket
Open insulating cover
out to remove.


connecting bracket
cut with
cutting pliers
soldering iron

Cut off the lead of the defective part with cutting pliers. Remove solder and take out the defective part.


solder
about 0.5 mm
After soldering, cut off
to match other leads.
soldering iron

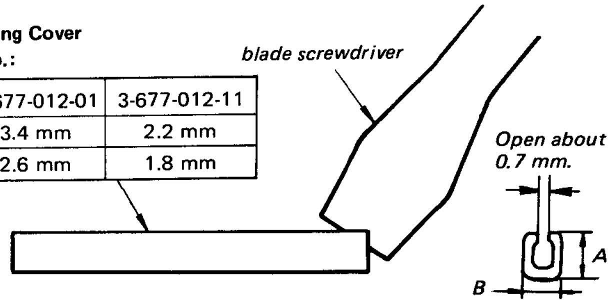
Insert the new part on the board and solder the lead to the board. Cut off the lead on the connecting bracket side so that it overlaps by about 0.5 mm, and solder to the connecting bracket.


insulating cover
connecting
bracket

Open the insulating cover groove about 0.7 mm and place over the connecting brackets, positioning one end first.

Insulating Cover Part No.:

	3-677-012-01	3-677-012-11
A	3.4 mm	2.2 mm
B	2.6 mm	1.8 mm

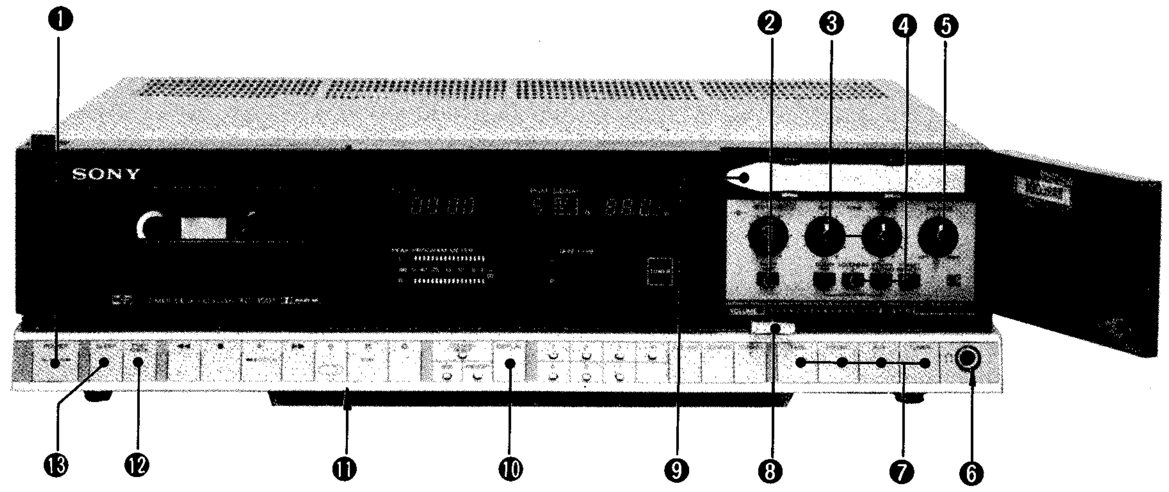

blade screwdriver
Open about
0.7 mm.
A
B

MEMO

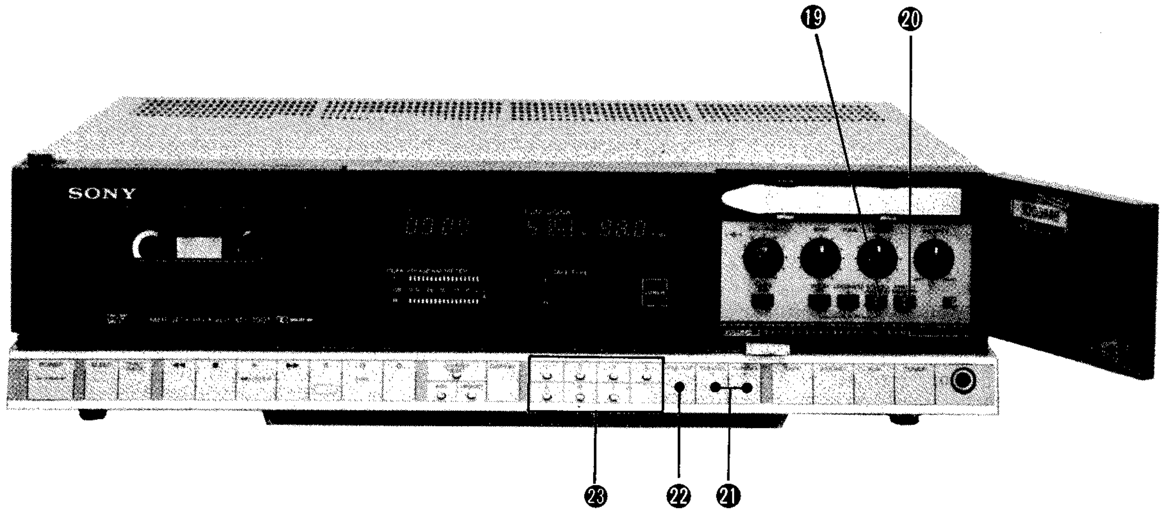
SECTION 1
OUTLINE

1-1. LOCATION AND FUNCTION OF CONTROLS

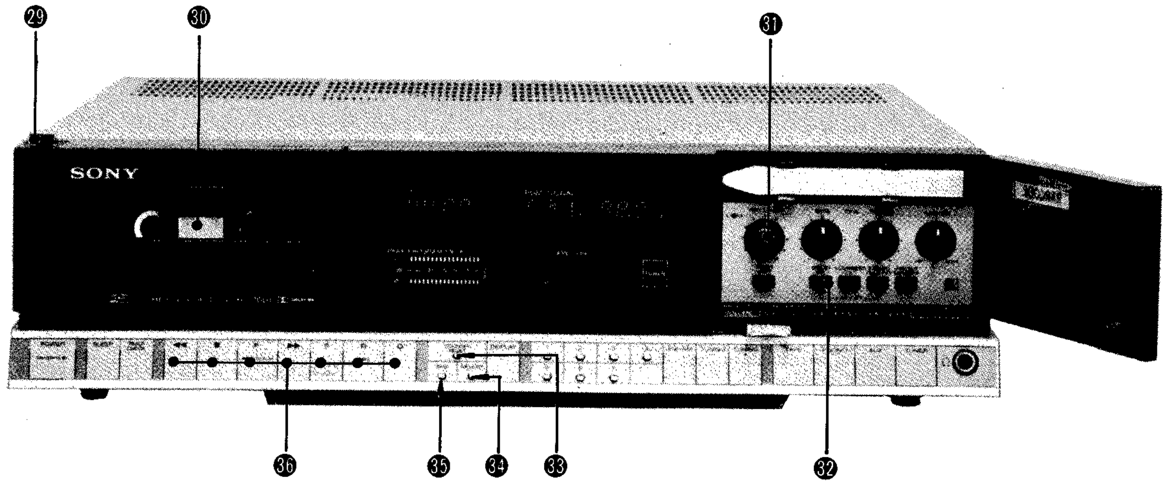
Control Section and Timer Section



Tuner Section



Cassette Deck Section



The numbers in the photos on page 3 are keyed to the following explanations.

CONTROL SECTION AND TIMER SECTION

① POWER ON/STAND BY key
Press the key to turn on the power. The cassette holder will be illuminated and the multi-purpose display will appear (POWER ON). Press it again so that the unit stands by. Only the clock and timer will continue operating in the STAND BY mode.

② TIMER SKIP switch
Depress the switch to skip the next timer program once. To release the switch, press it again.

③ BASS and TREBLE TONE controls
Adjust the tone quality of the reproduced sound. Turn clockwise (to +) for more bass or treble and counterclockwise (to −) for less.

④ LOUDNESS switch
Normally keep this switch released (⊓ OFF). When listening to program sources at a low volume, depress the switch (⊔ ON).
The loudness control compensates for the human ear's reduced response to very high and low frequency sound at low volume levels, and provides an apparently uniform response at these levels.
The effect on this control gradually decreases as the volume increases.

⑤ BALANCE control
Regulates the sound balance between right and left channels for optimum stereo effect. Clockwise rotation (to R) decreases the left-channel sound, and vice versa.
Normally set the control to the center position.

⑥ ∩ (headphone) jack
Accepts any low or high impedance stereo headphones. When the headphones are connected, the speakers will be disconnected automatically.

⑦ Function selector keys
Press one of these keys to select a desired program source. The program in use will be displayed on the multi-purpose display.
TUNER: For off-the-air programs received by the built-in tuner.
CD/AUX: For auxiliary programs (connected to CD/AUX inputs).
PHONO: For record programs (connected to PHONO inputs).
TAPE: For taped programs with the built-in cassette deck.

⑧ VOLUME control
Slide to the right for more volume.

⑨ Bar code reader
Used for clock setting and timer setting.

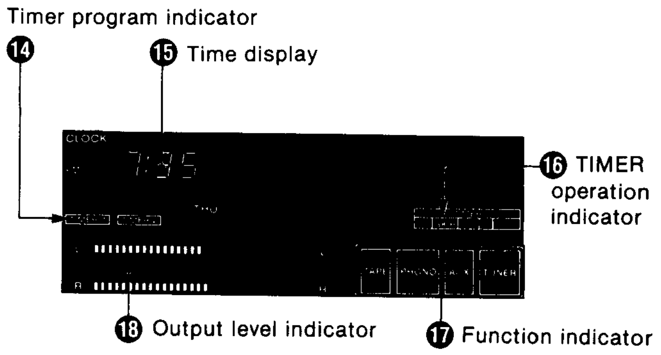
⑩ DISPLAY selector key
Each time the key is pressed, the display will be changed in sequence to the actual time (CLOCK), the tape counter (TAPE COUNTER) and the sleep timer setting (SLEEP).

⑪ Bar code sheet
Used for clock setting and timer setting.

⑫ TIMER CHECK key
Press the key to check the preset timer program. Each time the key is pressed, TIMER 1 or TIMER 2 program will be displayed alternately.

⑬ SLEEP timer key
Used for sleep timer setting. Each time the key is pressed, the displayed digits in minutes will be increased by 10. See page20.

Display for the control and timer sections



⑭ Timer program indicator
Indicates the preset timer number.

⑮ Time display
The clock continues operating even in the STAND BY mode.

⑯ TIMER operation indicator
Indicates the operation mode of the timer program.
When the TIMER SKIP switch is depressed, "SKIP" will appear.

⑰ Function indicator
Indicates the program source selected by the function selector keys.

⑱ Output level indicator
Indicates the output level supplied to the REC OUT jacks on the rear.

TUNER SECTION

⑲ STEREO/MUTING switch
Normally keep this switch depressed. "MUTING" appears on the frequency display and when tuning from station to station during manual tuning, interstation noise is eliminated. During FM reception, when a stereo signal of sufficient strength is received, the receiver operates in the stereo mode, and "STEREO" will appear. If the signal changes to mono, the receiver will be switched to the mono mode automatically.
When very weak stations are to be tuned in, or when an FM program is too noisy, press to receive the weak station, although the stereo feature is sacrificed. When this switch is released, keep the volume down to avoid possible speaker damage from interstation noise.

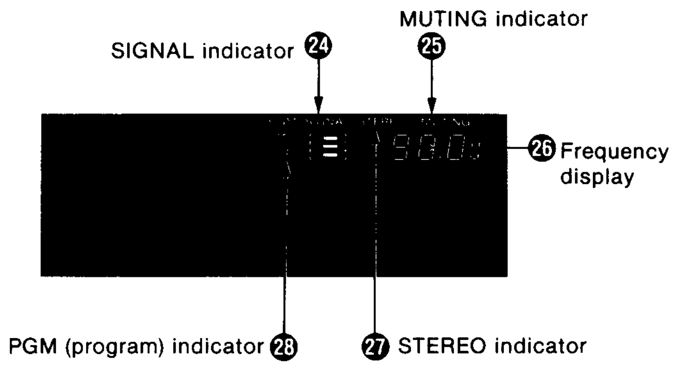
⑳ PRESET MEMORY switch
Used for memorizing FM or AM stations on the station preset buttons. While pressing this switch, press one of the station preset buttons.

㉑ TUNING keys
Press either the "+" or "−" key to change the frequency: Press the "−" key to go to a lower frequency and the "+" key to go to a higher.
- To change the frequency one step (0.05 MHz for FM, and 9 kHz for AM) at a time, press and immediately release the key.
- To change the frequency continuously, keep the key depressed. When a signal is received, scanning will stop for 2 seconds approximately, then will restart.
- To start automatic frequency scanning, keep the key depressed for one or two seconds.

㉒ FM/AM band selector key
Each time the key is pressed, FM or AM band is selected alternately.

㉓ Station preset buttons
An FM and AM station can be memorized on each station preset button. To call up a pre-memorized station, press the appropriate button.

Display for the tuner section



㉔ SIGNAL indicator
Indicates the strength of the tuned signal by the amount of indicator illumination. The fullest illumination means the antenna input signal is strong.

㉕ MUTING indicator
Illuminates when the STEREO/MUTING switch is depressed.

㉖ Frequency display
Indicates the frequency being received.

㉗ STEREO indicator
This indicator will light when an FM stereo program of sufficient signal strength is tuned in with the STEREO/MUTING switch depressed.

㉘ PGM (program) indicator
When the station preset button is pressed, the PGM number corresponding to the button will appear.

CASSETTE DECK SECTION

㉙ ⏏ (eject) button
Press this button to open the cassette holder.

㉚ Cassette holder

㉛ REC LEVEL (recording level) controls
These controls adjust the recording level. The outer knob is for the left channel and the inner for the right channel.

㉜ DOLBY NR switch
To record with the Dolby NR* (Noise Reduction) process, depress this switch (▭ ON). To record without the Dolby NR process, press again and release this switch (□ OFF).
When playing back, set this switch to the same position used in recording.

*The Dolby NR system reduces tape hiss and improves the signal-to-noise ratio. During recording, low-level high-frequency signals, which tend to be obscured by tape hiss, are boosted so that they are audible above any tape noise. When these signals are played back, the level is lowered to the original input level so that the level of any tape noise is reduced to the same extent.

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㉝ COUNTER RESET button
Press this button to reset the tape counter to "0.00".

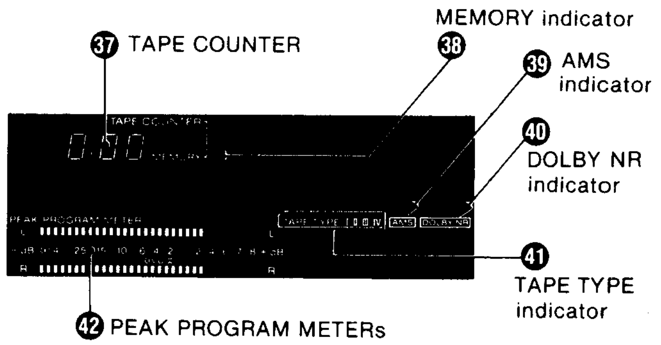
㉞ MEMORY (memory counter) button
Used for memory stop and memory play functions. See page 22.

㉟ AMS (Automatic Music Sensor) button
Used for the AMS operation. See page 22.

㊱ Cassette deck function keys
It is possible to switch directly from one mode to another. The indicators light when the cassette deck is in the forward, record or pause mode.
◀◀ (rewind) key: Press this key to rewind the tape.
■ (stop) key: To stop the tape, press this key.
▶ (forward) key: Press this key to play the tape back. To record, press this key while holding the ● key down.
▶▶ (fast-forward) key: Press this key to advance the tape rapidly.
● (record) key: Press this key together with the ▶ key to start recording.
❚❚ (pause) key: Press this key to stop the tape for a moment during recording and playback. To restart, press the key again. This key is also used to release the record muting mode.
○ (record muting) key: Press this key to eliminate unwanted material and to insert a blank space during recording.

TAPE SELECT switch (rear panel)
Generally set this switch to AUTO. The automatic tape select system will then operate. When using a TYPE III (Fe-Cr) cassette or a TYPE IV (METAL) cassette which has no METAL tape detector slots, set this switch to the Fe-Cr or METAL position. See page 15.

Display for the cassette deck section



㊲ TAPE COUNTER
When the cassette deck function key is pressed, the time display will change to the tape counter. The counter indicates approximate tape running time in minutes and seconds (−99.59 to 0.00 to 99.59). Several seconds after the tape stops, the tape counter will automatically change to time display.
(Even while the time is displayed, the counter digits are memorized until the COUNTER RESET button is pressed.)

㊳ MEMORY indicator
Illuminates when the MEMORY button is engaged (ON).

㊴ AMS indicator
Illuminates when the AMS button is engaged (ON).

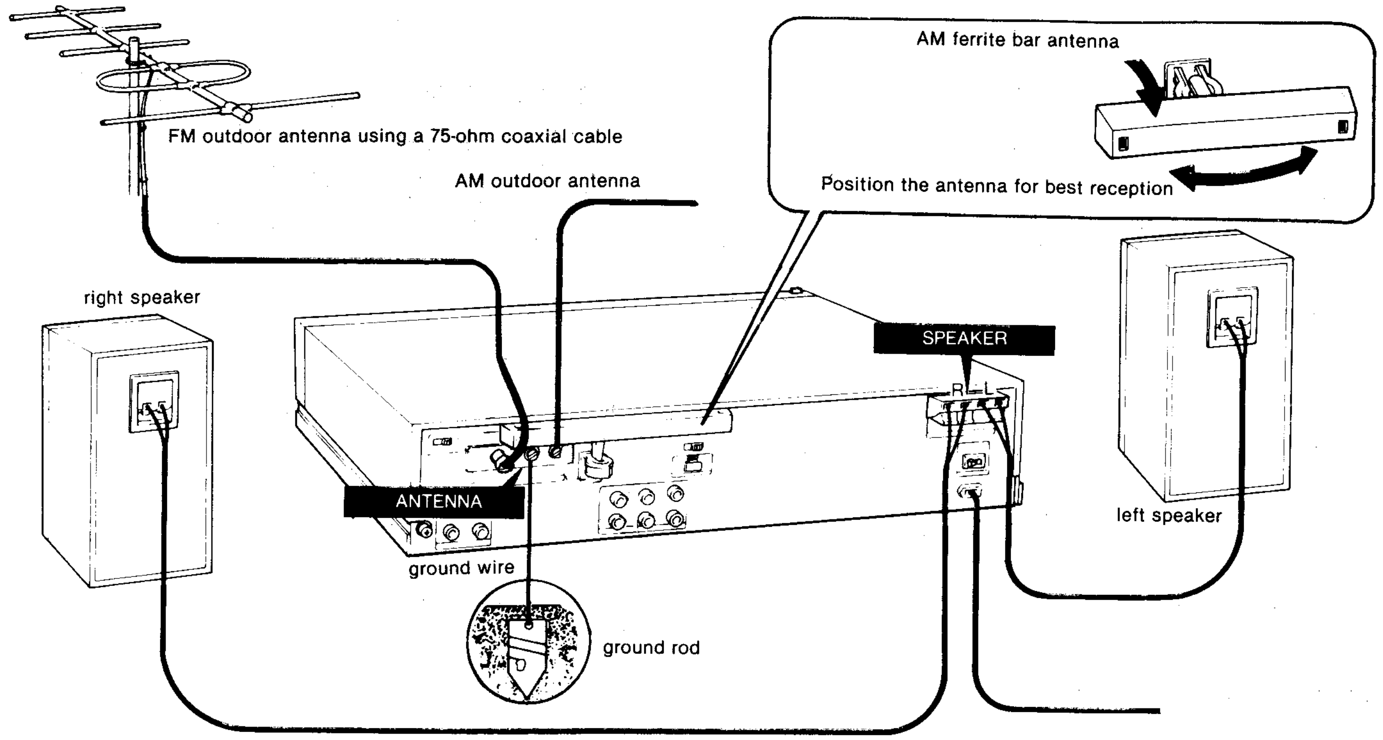
㊵ DOLBY NR indicator
Illuminates when the DOLBY NR switch is depressed.

㊶ TAPE TYPE indicator
Illuminates the indicator corresponding to the type of tape inserted.

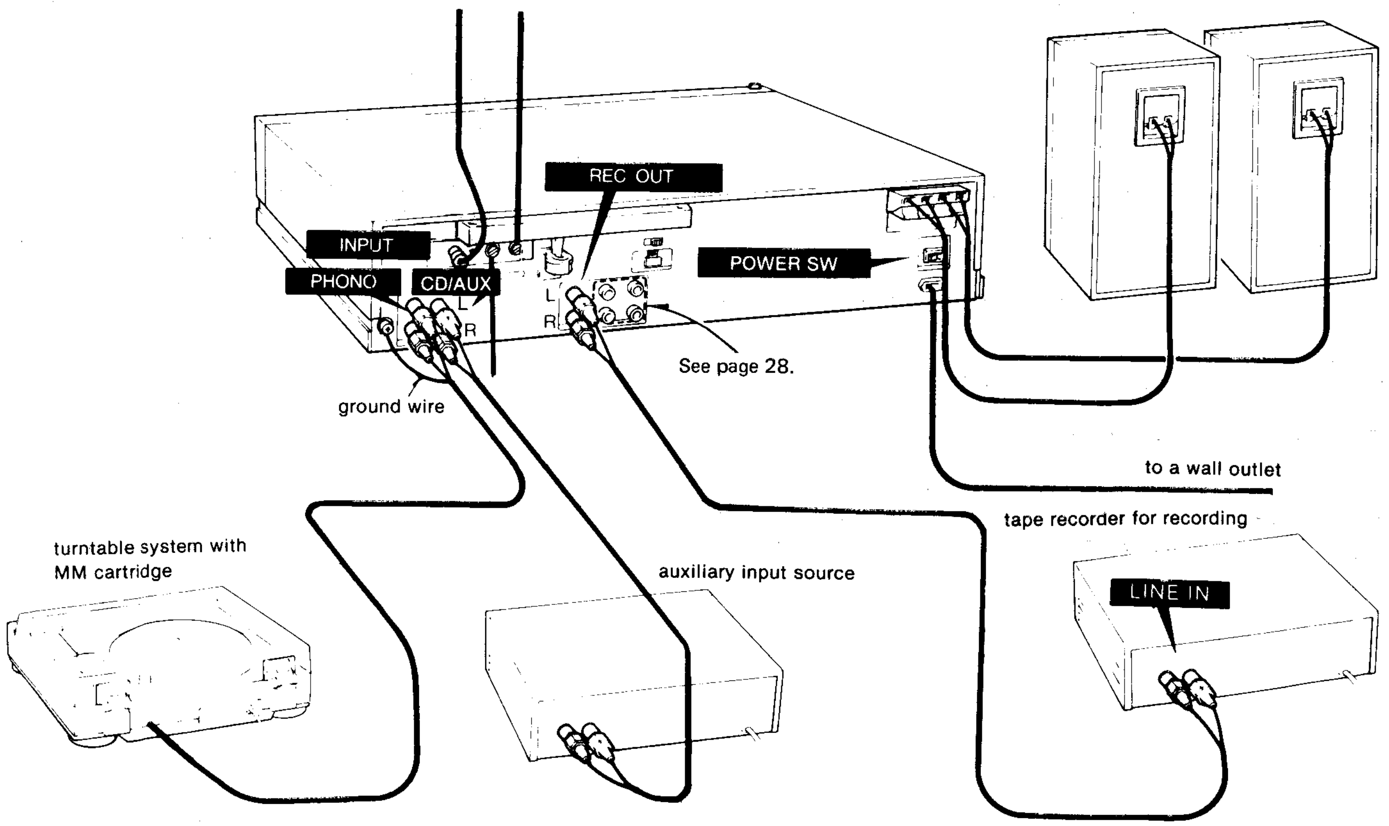
㊷ PEAK PROGRAM METERs
When the ● key is pressed, the output level indicators will be changed to the peak program meters which show the peak input level of each channel during recording.
For easy reading the highest input of each channel is held for about 4 seconds on the scale, except when a higher peak occurs before 4 seconds have passed, in which case that peak is immediately indicated.

1-2. CONNECTION DIAGRAM

Antenna and speaker connections


FM outdoor antenna using a 75-ohm coaxial cable
AM outdoor antenna
AM ferrite bar antenna
Position the antenna for best reception
right speaker
SPEAKER
R
L
ANTENNA
ground wire
ground rod
left speaker

Program source connections


REC OUT
INPUT
PHONO
CD/AUX
L
R
POWER SW
See page 28.
ground wire
to a wall outlet
tape recorder for recording
turntable system with MM cartridge
auxiliary input source
LINE IN

SPEAKER CONNECTION

Speaker power capacity

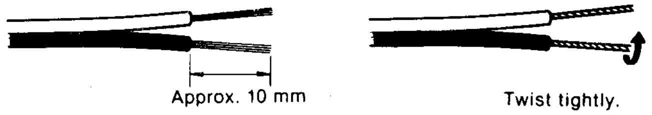
The receiver is rated at 40 watts minimum RMS per channel with an 8-ohm load at 1 kHz and may deliver an instantaneous peak power much greater than the rated power. Be sure to use speakers with adequate power handling capabilities. Always reduce the volume, when setting down or removing a tonearm or when tuning across the band. Speaker damage may result if these precautions are not observed.

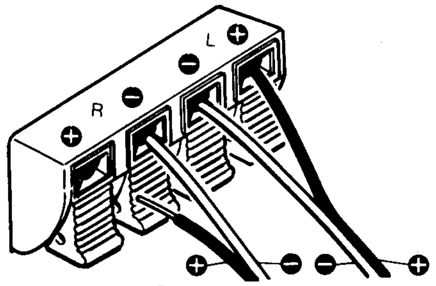
Speaker impedance

This receiver is designed to work best with speakers having nominal impedance ratings from 8 to 16 ohms.

Connections

Connect each speaker to the corresponding speaker terminals, i.e. right speaker to the R terminals and left speaker to L. Note that the colored or marked lead of a speaker cord goes to the ⊕ terminal and the other lead to the ⊖ terminal.


Approx. 10 mm
Twist tightly.



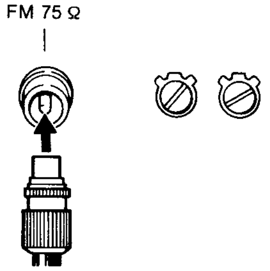
Depress the terminal button and fully insert the wires into the slot.
Then release the button.

Caution: Check that no loose strand of the wire shorts across the terminals.

ANTENNA CONNECTION

FM antenna

The 75-ohm coaxial receptacle is an IEC standard pin-connector (male). Attach an optional IEC standard socket-connector (female) to the 75-ohm coaxial cable and insert it firmly into the FM 75 Ω ANTENNA receptacle.



The quality of received signal will be greately improved with suitable FM antenna. For further imformation about FM antennas, see page 30.

AM antenna

In most areas, the built-in ferrite bar antenna will provide satisfactory AM reception. In difficult reception areas, it may be necessary to connect a length of wire 10 to 20 meters (30 to 60 feet) long to the AM ANTENNA terminal. Extend this out of doors if possible, keeping as much of the antenna horizontal as possible.

PROGRAM SOURCE CONNECTIONS

- The PHONO INPUT jacks: accept a turntable system with a typical moving-magnet (MM) cartridge.
- The CD/AUX INPUT jacks: accept various input sources such as a tape recorder (for playback only), an additional tuner, or a CD (Compact Disc) player available in the future.
- The REC OUT jacks: accept a tape recorder for recording.
- The TUNER OUTPUT jacks: accept a tape recorder for recording of off-the-air programs. See page 29.
- The TAPE OUTPUT jacks: accept a tape recorder for duplicating taped programs. See page 28.

GROUND CONNECTION

When an outdoor antenna is installed, the direct connection of the ground terminal [⏚] on the antenna terminal plate to a good ground is recommended for lightning protection. The use of a lightning arrester is recommended for any outdoor antenna.

To prevent hum, be sure to connect the ground wire of the turntable system to the ground terminal. If hum still exists, it may be helpful to connect the ground terminal directly to earth via a ground rod or other good ground, such as a clamp of a cold water pipe.

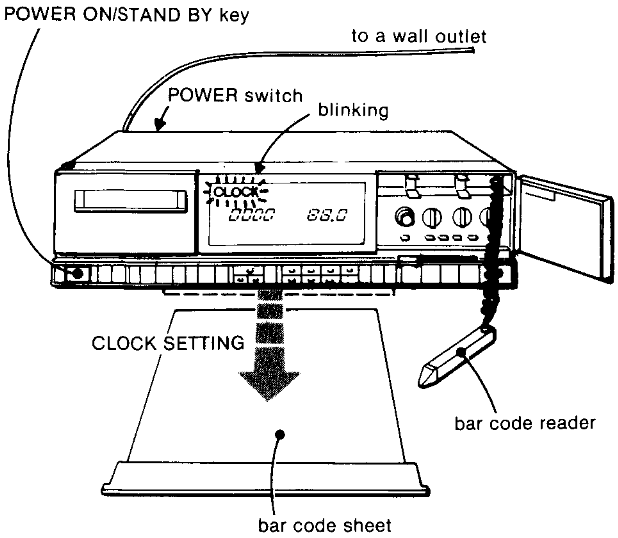
1-3. OPERATIONS

CLOCK SETTING

After the connection is made, first set the clock using the bar code sheet.

1 Connect the ac power cord to a wall outlet, set the POWER switch on the rear to ON and press the POWER ON/STAND BY key. The "CLOCK" will blink.

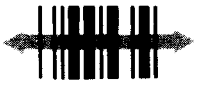
2 Take out the bar code reader and the bar code sheet.


POWER ON/STAND BY key
to a wall outlet
POWER switch
blinking
CLOCK
CLOCK SETTING
bar code reader
bar code sheet

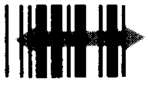
3 Run the reader over the codes following the diagram arrow on the sheet. A single short beep means you can proceed to the next step.

How to run the reader

● Run the reader **over the entire code**, either from left to right or from right to left.



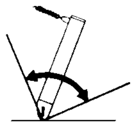
this way



not this way

● Run the reader **lightly**, **rapidly** and **with uniform force**. Do not press it against the sheet.

● Keep the reader at an angle as illustrated. Do not tilt it too much.



● Always keep the reader tip clean. Remove the dust using a small soft brush like a stylus cleaner of the turntable.

When the clock setting is finished, "CLOCK" stops blinking and the other display appear.

After the clock setting, replace the bar code sheet and the bar code reader.

The "TIMER SETTING" on the rear of the bar code sheet will be explained on page 22 in this manual.

When the power is turned off...

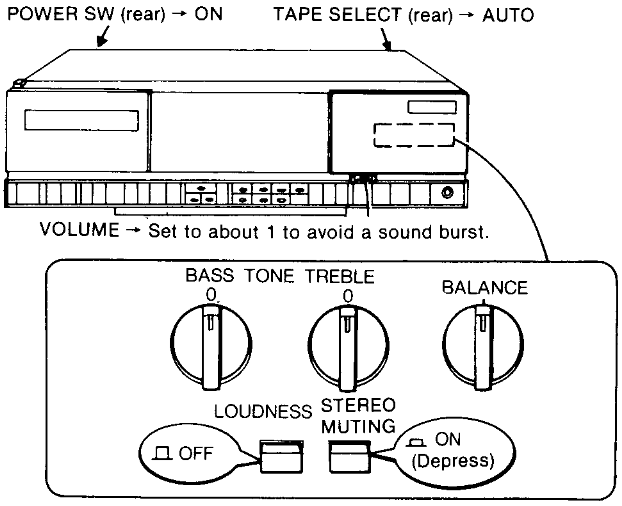
The clock keeps operating even when the POWER ON/STAND BY key is pressed to STAND BY.

When the POWER switch on the rear is set to OFF and/or when the ac power cord is unplugged from the wall outlet or when a power interruption occurs, the clock will keep operating for about 30 minutes with the built-in back-up battery*, then display will disappear.

In this case, reset the clock when the power is turned on again.

*The built-in back-up battery is charged automatically while the power cord is connected to the wall outlet and the POWER switch is set to ON. The fully charged battery (after 48 hours of charging) will operate the clock about 30 minutes.

PRELIMINARY OPERATION


POWER SW (rear) → ON
TAPE SELECT (rear) → AUTO
VOLUME → Set to about 1 to avoid a sound burst.
BASS TONE TREBLE
0
0
BALANCE
LOUDNESS
STEREO MUTING
OFF
ON (Depress)

Abbreviations of the days

SUN—Sunday MON—Monday TUE—Tuesday
WED—Wednesday THU—Thursday FRI—Friday
SAT—Saturday
AM 0:00—midnight PM 0:00—noon

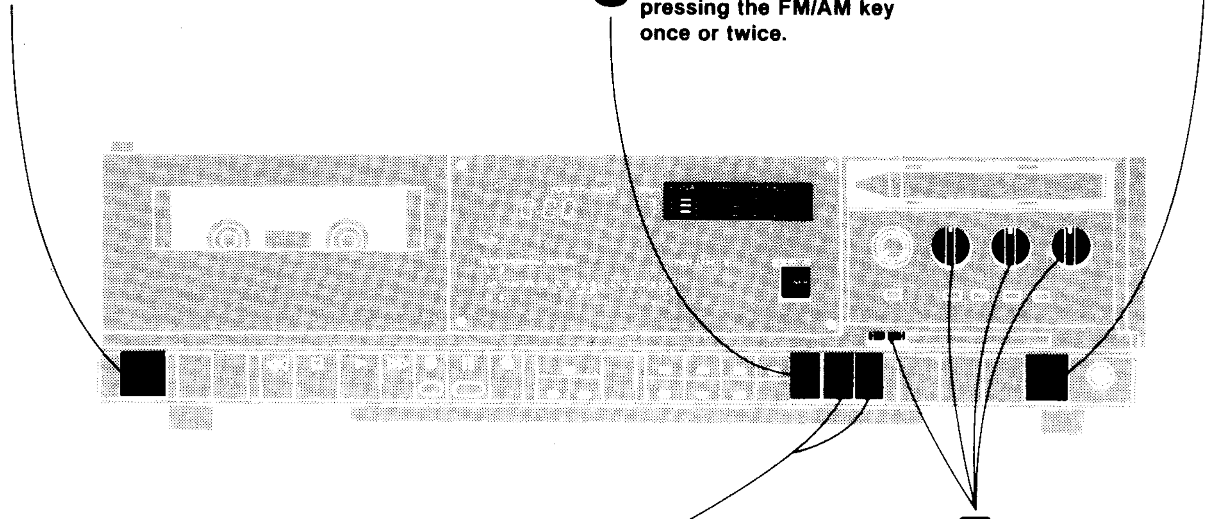
BROADCAST RECEPTION

Follow the numbered sequence.

1 **Press the POWER ON/STAND BY key.**

3 **Select the desired band by pressing the FM/AM key once or twice.**

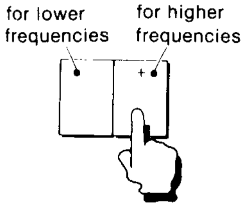
2 **Press the TUNER key.**

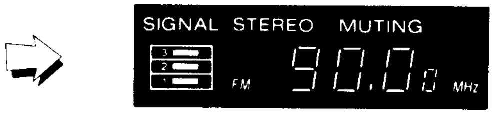


5 **Adjust the volume, tone and stereo balance.**

4 **Tune in the desired station with the TUNING keys.**

Automatic tuning



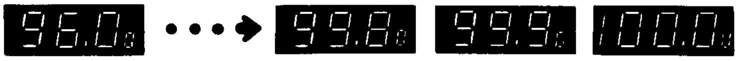


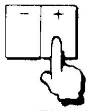
Depress the TUNING key and release it when automatic frequency scanning starts.

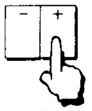
Automatic frequency scanning will stop when a signal is received. If the received signal is not the desired one, press the TUNING key again.

When a signal is too weak for automatic tuning

(and when you know the station frequency)







Press and immediately release the key repeatedly until the desired frequency is displayed.

Press the TUNING key and release it when automatic frequency scanning starts.

When the indication approaches the desired frequency, press and immediately release the key to stop scanning.

To tune in a very weak and noisy FM station

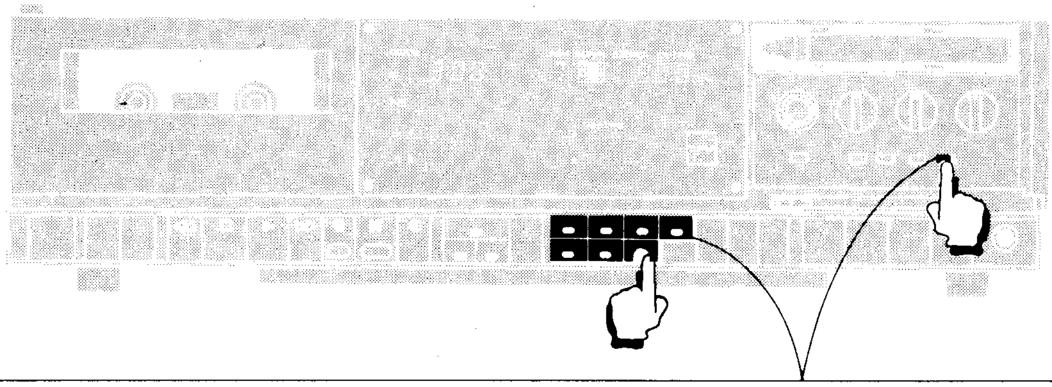
Press to release the STEREO/MUTING switch (⊓ OFF). This will result in better reception, at the sacrifice of the stereo effect of the FM stereo program. When the STEREO/MUTING switch is released, keep the volume down while tuning to avoid possible speaker damage from interstation noise.

MEMORY PRESET TUNING

Once you assign the frequencies to the memory, all you need do to select a desired station is press the appropriate station preset button.
For each station preset button, you can memorize an FM and an AM station. A total of 14 stations (7 FM and 7 AM stations) can be memorized.

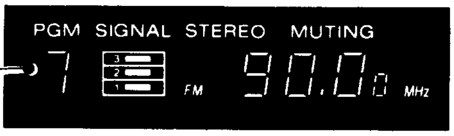
To memorize a frequency

1 Tune in a station to be memorized. (See page 16.)



2 While pressing the PRESET MEMORY switch, press the desired station preset button.
With a beep sound the frequency is memorized.

PGM number: shows the number of the preset station button.



Repeat steps **1** and **2** for each button and each band.

To receive a memorized station
Select the FM or AM band with the FM/AM key and press the station preset button of the station you want to tune in.

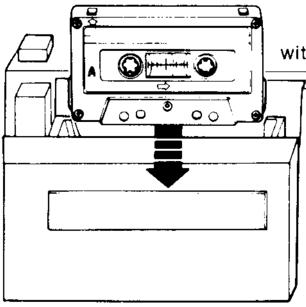
To change a memorized station
When you assign a new station frequency to a station preset button, the station on the same band which was previously memorized is automatically erased.
An erasure cannot be made without a new input.

RECORDING

Follow the numbered sequence.

1 Press the POWER ON/STAND BY key.
The logic-controlled function keys do not activate until 4 seconds after the power is turned on. Wait until the ▮▮ indicator goes off.

2 Press the ⏏ button and insert a cassette.



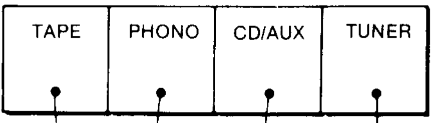
with the tape surface down.

The indicator corresponding to the type of tape inserted lights.

TAPE TYPE I

Set the TAPE SELECT switch on the rear to the appropriate position when using a TYPE III (Fe-Cr) cassette or a TYPE IV (METAL) cassette which has no METAL tape detector slots. See page 19.

3 Select the desired program source and play the program.

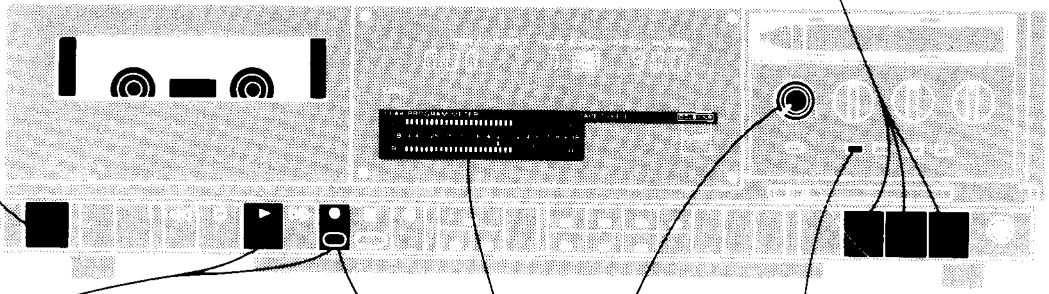


For record programs

For auxiliary sources connected to the CD/AUX jacks

For off-the-air programs

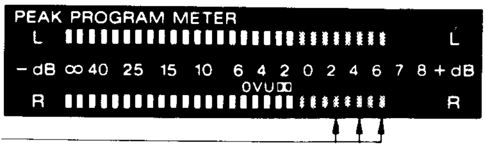
If the TAPE key is pressed, the ● (record) key cannot be activated.



4 Depress for recording with the Dolby NR process.
DOLBY NR lights.
For recording without the Dolby NR process, press to release the DOLBY NR switch.

5 Press the ● key and adjust the recording level with the REC LEVEL controls.

Adjust the recording level so that the peaks fall **momentarily** within the proper setting level depending on the type of tape being used.



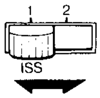
Proper setting level: +2 **dB** for TYPE I and TYPE II cassettes, +4 **dB** for TYPE III cassettes, or +6 **dB** for TYPE IV cassettes.

6 Press the ● and ▶ keys simultaneously.
Recording will begin.

The recording level is not affected by the VOLUME, TONE and BALANCE control settings, so you can listen to the program at any volume and with any tone adjustments you want while recording.

ISS (Interference suppress switch)

If interference is encountered while recording AM programs, use the ISS switch on the rear to suppress the interference. Slide the switch to 1 or 2 position, depending on which best reduces the noise.



MORE ACCURATE RECORDING STARTS

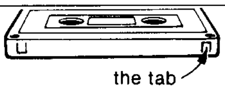
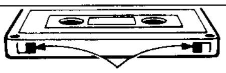
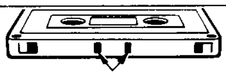
You can use the ❚❚ key to start recording more accurately than is possible when recording is started by pressing both the ● and ▶ keys.

1 After completing step **5** in the chart on page 14, press the ❚❚ key.
2 Hold the ● key down and press the ▶ key.
3 At the moment you wish to start recording, you need only press the ❚❚ key again.

AUTOMATIC TAPE SELECT SYSTEM

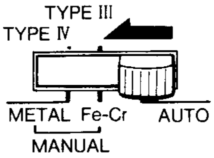
With the TAPE SELECT switch at the AUTO position, this automatic tape select system is actuated by the detector slots of certain cassettes and automatically sets the optimum recording and playback characteristics.

The tape type detected will be shown by the indicator.

Type of tape	Tape detector slots	TAPE indicator
TYPE I (NORMAL) TYPE III (Fe-Cr)		TAPE TYPE I
TYPE II (CrO₂)	 CrO₂ tape detector slots	TAPE TYPE II
TYPE IV (METAL)	 METAL tape detector slots	TAPE TYPE IV

As shown in the above illustrations, when inserting TYPE III (Fe-Cr) cassettes and TYPE IV (METAL) cassettes which have no METAL tape detector slots, the correct TAPE indicator does not light up and the automatic tape select system cannot work properly.

Set the TAPE SELECT switch at the rear to the TYPE III (Fe-Cr) or TYPE IV (METAL) position when using these cassettes.



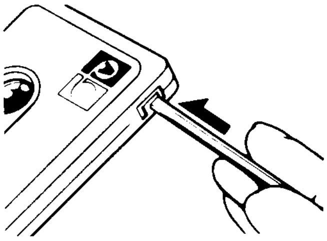
Tape list

Tapes (C-60 and C-90)		Type of tape
SONY : **AHF, BHF, CHF** BASF : LH-X, Professional I MAXELL : UD, UD-XL I, XL I-S SCOTCH : MASTER I	AGFA : SUPER FERRO DYNAMIC FUJI : FX-I PHILIPS : SUPER FERRO-I TDK : AD	TYPE I (NORMAL)
SONY : **UCX-S, CD-α** BASF : Professional II MAXELL : UD-XL II, XL II-S SCOTCH : MASTER II	AGFA : STEREO CHROM FUJI : FX-II PHILIPS : CHROMIUM TDK : SA, SA-X	TYPE II (CrO_2)
SONY : **FeCr** BASF : Professional III SCOTCH : MASTER III	AGFA : CARAT PHILIPS : FERRO CHROMIUM	TYPE III (Fe-Cr)
SONY : **METALLIC**	Other metal tapes	TYPE IV (METAL)

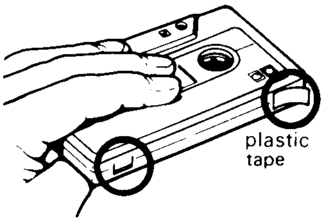
NOTES ON CASSETTES

To protect cassettes from accidental erasure

Remove the tab as illustrated so that the record mode does not function when the key is pressed. To record on a cassette once tabs have been removed, simply cover the slot with plastic tape.

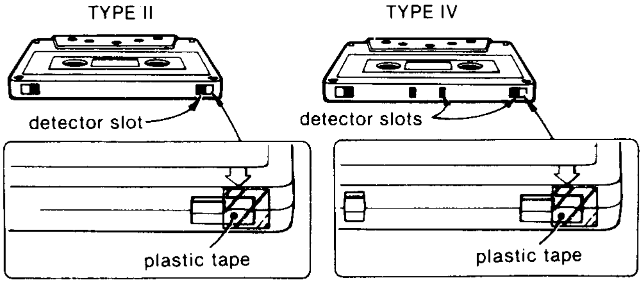


To protect side A recording



Do not stick any material on the cassette except for tape on the circled portions

- Be careful not to cover the detector slots of the TYPE II (CrO_2 tape) and TYPE IV (metal tape) cassettes.



Cassette care

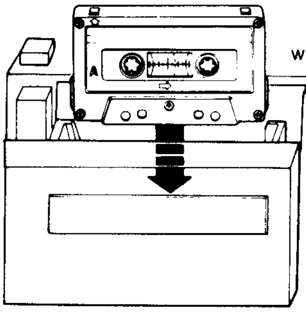
- Do not stick thick paper or tape onto the cassette, as this may affect proper cassette alignment and prevent proper tape contact with the head.
- Keep cassettes away from magnetic equipment such as speakers, amplifiers, etc., as erasure or distortion on your recorded tape could occur.
- Do not expose a cassette to direct sunlight, extremely cold temperatures or moisture.

PLAYBACK

Follow the numbered sequence.

1 Press the POWER ON/STAND BY key.

2 Press the ≜ button and insert a recorded cassette.



with the tape surface down

The indicator corresponding to the type of tape inserted lights.

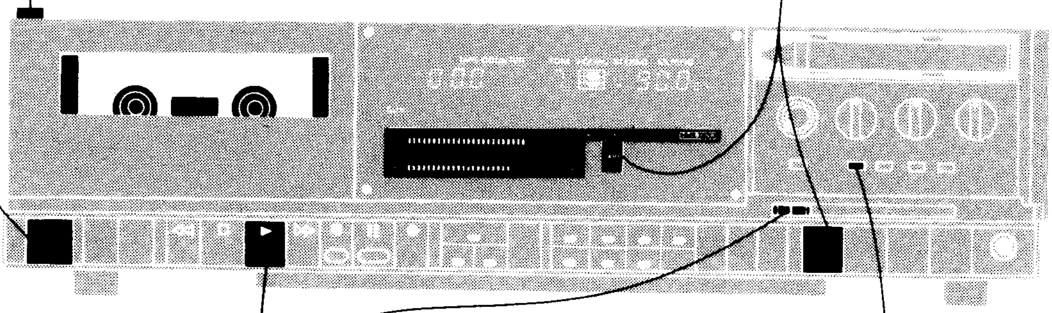
TAPE TYPE I

Set the TAPE SELECT switch on the rear to the appropriate position when using a TYPE III (Fe-Cr) cassette or a TYPE IV (METAL) cassette which has no METAL tape detector slots.

3 Press the TAPE key.

"TAPE" lights.

TAPE



5 Press the ▶ key.
Playback will begin.
Adjust the volume.

4 Depress the DOLBY NR switch for Dolby NR processed tape.
DOLBY NR lights.
For non-Dolby NR processed tapes, press to release the switch.

TO RECORD MATERIAL ONTO A SPECIFIC PORTION OF TAPE

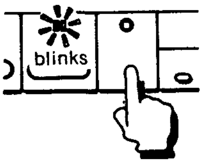
When you want to re-record a specific portion of tape or to insert new material between two points on a tape you will find it handy to be able to change directly from the playback to the record mode by pressing the ● key while holding the ▶ key down.

RECORD MUTING

By pressing the ○ (record muting) key during recording, four seconds interspacing is provided automatically, eliminating unwanted program material such as broadcasting commercials. While the record muting is operating, the incoming signal is not recorded on the tape but it continues to register on the meters and feed to the monitor so that you know exactly what is going on.

To insert a 4-second blank automatically

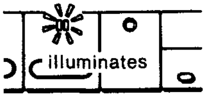
When the segment you do not wish to record begins,



A blank is made while the tape continues to run.

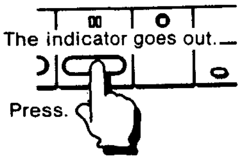
Press. (Do not keep pressing.)

after 4 seconds



The tape pauses automatically.

When you wish to resume recording.



The tape starts to run.

To insert a blank less than four seconds long
Press the ○ key to mute recording. Press the ❚❚ key when you want to resume recording.

To insert a blank over four seconds long
Hold down the ○ key for as long as you want the blank segment on the tape to be. After four seconds, the indicator of the ❚❚ key will blink more rapidly. When you release the ○ key, the tape deck will be in the pause mode. When you want to resume recording, press the ❚❚ key to release the pause mode.

ERASING

When the tape deck functions in record mode, the erase head automatically erases any previously recorded material.
To erase without recording:

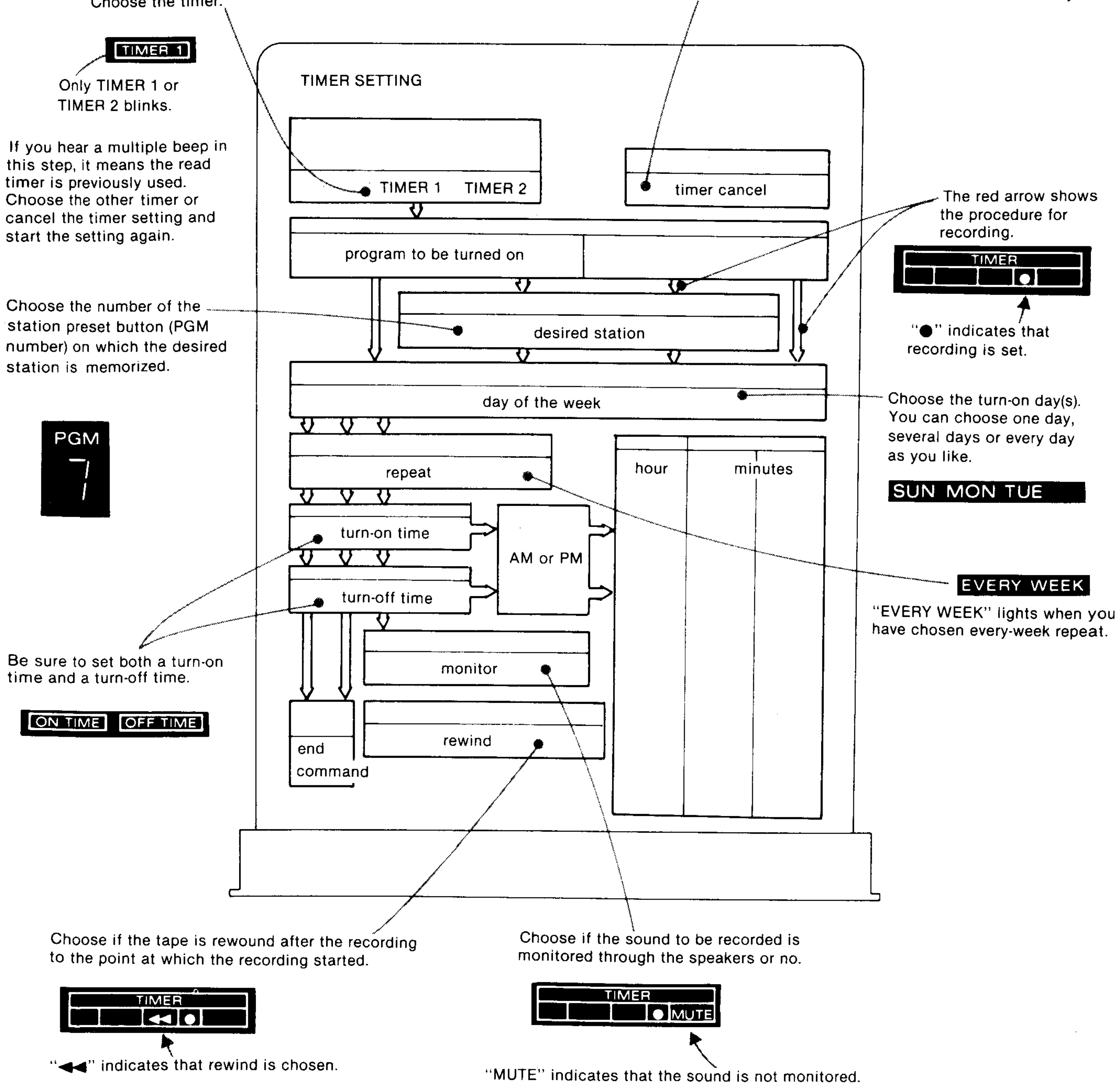
1. Make sure that the safety tab of the cassette is in place, or that the tab slot is covered with plastic tape.
2. Insert the cassette to be erased and check that the TAPE indicator corresponds to the inserted tape. Change the TAPE SELECT switch if the indicator and the tape do not correspond.
3. Set the REC LEVEL controls fully to "0". (Disconnecting all inputs will result in a more complete erasure.)
4. Press a function selector key other than the TAPE and press the ● and ▶ keys simultaneously.

TIMER SETTING

The built-in timer can control two pairs of turn-on and turn-off operations for any desired program.
To set the timer, use the bar code sheet.

Take out the bar code sheet and the bar code reader, and run the reader over the codes following the diagram arrow on the sheet.
A single, short beep means you can proceed to the next step.
A multiple beep means you have proceeded in an incorrect order.

Bar code sheet and display


TIMER 1
TIMER SETTING
TIMER 1
TIMER 2
timer cancel
program to be turned on
desired station
day of the week
repeat
hour
minutes
turn-on time
turn-off time
AM or PM
monitor
rewind
end command
PGM
7
TIMER
SUN MON TUE
EVERY WEEK
ON TIME
OFF TIME
TIMER
TIMER
MUTE

Choose the timer.

Only TIMER 1 or TIMER 2 blinks.

If you hear a multiple beep in this step, it means the read timer is previously used. Choose the other timer or cancel the timer setting and start the setting again.

Read this code to cancel a timer setting.
Be careful not to run the reader over this code inadvertently.

The red arrow shows the procedure for recording.

"●" indicates that recording is set.

Choose the number of the station preset button (PGM number) on which the desired station is memorized.

Choose the turn-on day(s). You can choose one day, several days or every day as you like.

"EVERY WEEK" lights when you have chosen every-week repeat.

Be sure to set both a turn-on time and a turn-off time.

Choose if the tape is rewound after the recording to the point at which the recording started.

"◀◀" indicates that rewind is chosen.

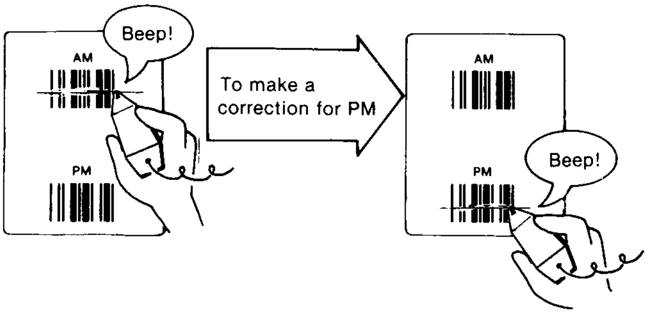
Choose if the sound to be recorded is monitored through the speakers or no.

"MUTE" indicates that the sound is not monitored.
You can hear, however, the sound through headphones.

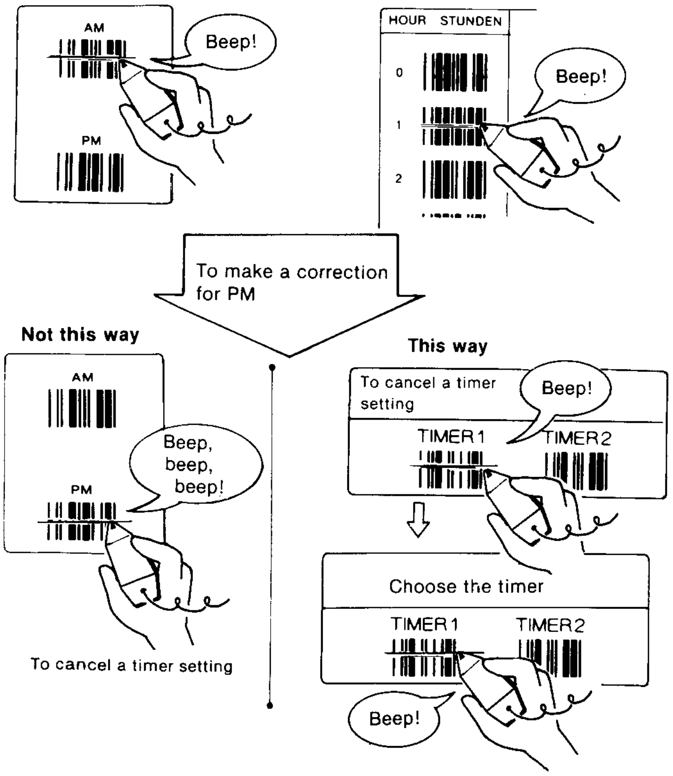
After 4 or 5 seconds, the display will revert to the clock.
The preset timer indicator(s) remain displayed.
Replace the bar code sheet and the bar code reader.

When a power interruption occurs or when the ac power cord is unplugged from the wall outlet, the timer settings will be retained for about 30 minutes with the built-in back-up battery (after 48 hours of charging).

If you ran the reader over an incorrect code...
To make a correction at the same step: Read the correct code at that step. The incorrect code will be automatically cancelled.


Beep!
AM
PM
To make a correction for PM
AM
Beep!
PM

To make a correction is a previous step: First read the code "To cancel a timer setting" and start all over again.
The read codes will be automatically cancelled.


AM
Beep!
PM
HOUR STUNDEN
0
1
2
Beep!
To make a correction for PM
Not this way
AM
Beep, beep, beep!
PM
To cancel a timer setting
This way
To cancel a timer setting
Beep!
TIMER 1
TIMER 2
Choose the timer
TIMER 1
TIMER 2
Beep!

To cancel the MUTE setting for muting the sound during recording
Press the TIMER SKIP switch while the timer is being activated. The sound will come on.

To cancel all the settings on the TIMER 1 or TIMER 2
Run the bar code reader over the code "To cancel a timer setting" on the sheet. All the settings on the code you read either TIMER 1 or TIMER 2 will be cancelled.

To check the timer setting

Press the TIMER CHECK key.
The turn-on time preset on the TIMER 1 or TIMER 2 will be displayed. (If neither of the timers is preset, no display will appear.)

after 5 seconds ⇩

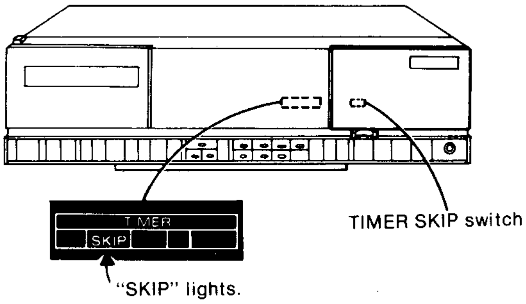
The display will change to the turn-off time with a single short beep.

after 5 seconds ⇩

The display will revert to the clock.

- To check the other timer setting, press the TIMER CHECK key again.

To skip the next timer setting momentarily
By pressing the TIMER SKIP switch, you can skip the next timer setting to be turned on without changing the setting. This skip will effective once.

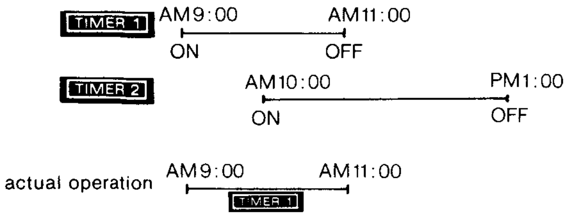

TIMER
SKIP
TIMER SKIP switch
"SKIP" lights.

To continue listening to the program after the turn-off time
Press the TIMER SKIP switch while the timer is being activated.

What is "CD/AUX" on the bar code sheet?
The "CD/AUX" means the program connected to the CD/AUX inputs on the rear of the receiver. To turn on the CD/AUX program at the preset time, set the power switch of that program source to ON.

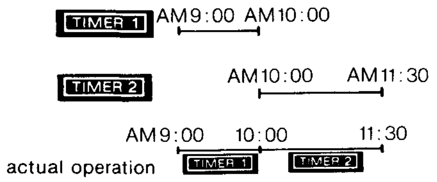
Can I set the timer while listening to or recording another program?
Yes. Since the bar code system is dependent on the keys on the receiver, you can set the timer at any time. The display will be changed for timer setting but the recording or playing will continue. When the turn-on time comes, the program will be changed automatically to the one preset on the timer.

Can I set the turn-on time of a program before the turn-off time of the other program?
No. For example, if you set the two programs as follows,


TIMER 1
AM9:00
AM11:00
ON
OFF
TIMER 2
AM10:00
PM1:00
ON
OFF
actual operation
AM9:00
AM11:00
TIMER 1

The TIMER 2 will not be activated.

But, if you set,


TIMER 1
AM9:00
AM10:00
TIMER 2
AM10:00
AM11:30
actual operation
AM9:00
10:00
11:30
TIMER 1
TIMER 2

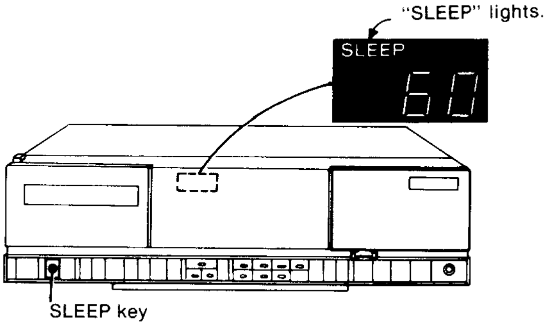
The TIMER 2 will be activated at 10:00 a.m.

Can I set the turn-off time after midnight?
Yes. For example, if you set the turn-on time at PM 11:30 on Saturday and the turn-off time at AM 1:00 while the "SAT" (Saturday) is displayed, the program will be turned off correctly at 1:00 a.m. on Sunday.

SLEEP TIMER—to turn off the power automatically

Using the SLEEP key, you can turn off the power automatically after up to 60 minutes (sleep timer function). This function is convenient when you go to sleep while listening to a tape or recording an FM program.

To set the sleep timer
While listening to or recording the desired program, press the SLEEP key. The display shows the sleep timer operation time in minutes.
Each time the SLEEP key is pressed, the digits will increase by 10. (After 60 the digits will disappear. With another push, 10 will appear again.)


"SLEEP" lights.
SLEEP
60
SLEEP key

To turn off the power before the preset time
Press the POWER ON/STAND BY key.

To cancel the sleep timer setting before the preset time
Press the SLEEP key several times until the digits disappear. To reset to clock display, press the DISPLAY key.

USING THE TAPE COUNTER

When the cassette deck function key (◀◀, ▶, ▶▶ or ●) is pressed, the time display will be changed to the tape counter.

When the deck is in stop mode, press the DISPLAY key to change the display to the tape counter.

The first two digits of this tape counter show the approximate recording or playback time in minutes, and the last two digits show the seconds.

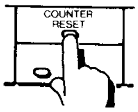
The digits on the tape counter are memorized even when the time is displayed and the receiver is in the STAND BY mode.

TO INDEX THE WHOLE TAPE

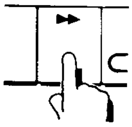
Before recording or playback, set the counter to "0.00" by pressing the COUNTER RESET button.

As the tape runs, the figures of the counter change. Note the numbers and the program being recorded or played back. Any point of the tape can thus be readily located later by reference to these numbers.

TO CHECK THE AVAILABLE RECORDING TIME ON ONE SIDE OF A CASSETTE

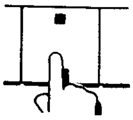


At the beginning of the tape, set the counter to "0.00".

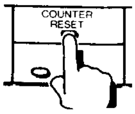


Fast-forward the tape to the end.
The digits will show the approximate available recording time.

TO DETERMINE THE REMAINING RECORDING TIME

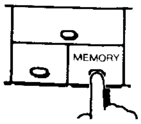


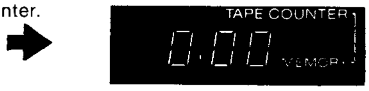
Stop the tape at the point at which you wish to begin recording.

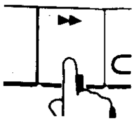


Set the counter to "0.00".

Activate the memory counter.

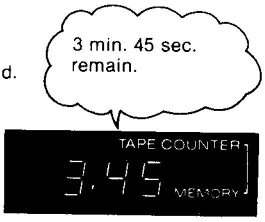


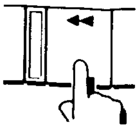




Fast-forward the tape to the end.

The digits will show the approximate remaining recording time.

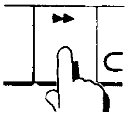




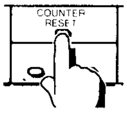
Rewind the tape.
The tape will stop at "0.00".

TO MONITOR THE REMAINING RECORDING TIME WHILE RECORDING—Using the minus display

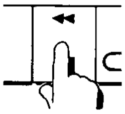
This counter shows the recording or playback time from the "0.00" point preceded by a minus sign when the tape is rewound beyond "0.00".



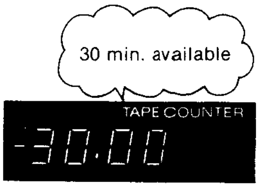
Fast-forward the tape to the end.



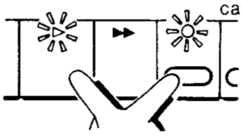
Set the counter to "0.00".



Rewind the tape to the beginning.



The digits will show the approximate recording time on one side of the cassette.



Start the recording.

The digits will change from −30.00 to −29.59, −29.58 ... as the recording goes on, and you can monitor the remaining recording time at any point on the tape.

The accuracy of the counter

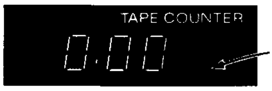
This counter is not actually a digital clock, so that the displayed figures are not exactly equal to the actual elapsed time. The accuracy will vary depending on the type of tape being used.

This counter has been designed using C-60 and C-90 cassettes as the standard. Make sure that the displayed time is greater than the time required when using a C-46 cassette and a metal tape.

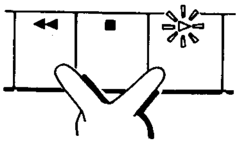
TO LOCATE A PARTICULAR POINT OF A TAPE

1 To play from the beginning of the tape	**AUTO PLAY**
2 To rewind the tape to the desired point	**MEMORY STOP**
3 To play from a desired point	**MEMORY PLAY**
4 To play from the beginning of the selection	**AMS (Automatic Music Sensor)**

1 AUTO PLAY



Make sure that the MEMORY indicator is not blinking. If it is blinking, press the MEMORY button to cancel the previous memory.

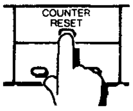


Press simultaneously.

After the tape is completely rewound, the tape will automatically replay.

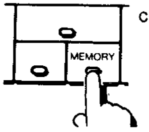
2 MEMORY STOP | 3 MEMORY PLAY

1

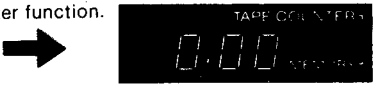


Start recording or playback. At the point which you want to locate later, set the counter to "0.00"

2

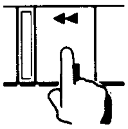


Activate the memory counter function.



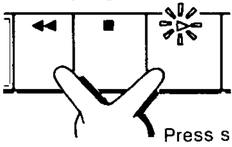
3 After playback or recording,

MEMORY STOP



The tape begins to rewind and stops at the "0.00" automatically.

MEMORY PLAY



The tape will replay automatically after rewinding up to the "0.00" point.

Press simultaneously.

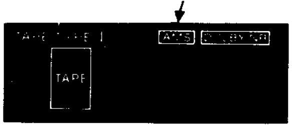
- The tape stops around "–0.03" in order to avoid cutting off the starting point.
- If you want to rewind further than the "0.00" point, press the ◀◀ key again.
- If you hold the ◀◀ key down while the tape rewinds past "0.00," the tape will not stop automatically at the desired point.

4 AMS (Automatic Music Sensor)

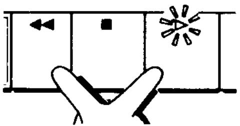
During playback, use the Automatic Music Sensor (AMS) to locate the beginning of the selection being played or the following selection. The AMS searches either forward or in reverse for the blank space between selections. Playback will begin automatically from the beginning of the selection.

1 Press the AMS button.

"AMS" lights.

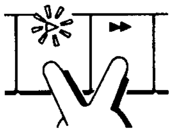


2 **To replay the selection being played**

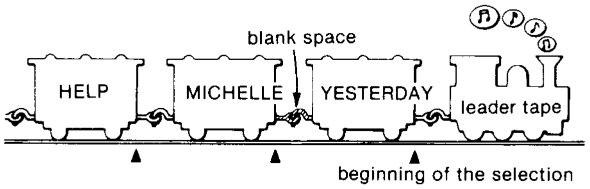


After rewinding, the tape will replay from the beginning of the selection.

To play the following selection



After fast-forwarding, the tape will play from the beginning of the following selection.



- If you press the ▶ and ▶▶ keys at the beginning of a tape, playback will start from the beginning of the first selection.
- If you press the ▶ and ▶▶ keys at a blank space, which is too short to be detected by the AMS, the playback will start from the beginning of the selection after the following one.

Notes on AMS operation

- Since AMS works by searching out the blank spaces on a tape, it may not operate if there is noise in the space between selections, or if the space is too short to be detected.

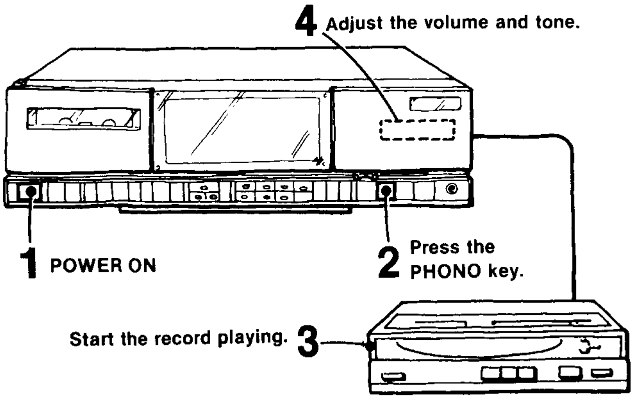
The record muting facility of this cassette deck can make a four second blank space that will assure AMS operation on any recorded tape.

- If the recorded music includes a long pause, or if it continues for a time as sufficiently low volume, as may happen for instance with classical music, the AMS will treat this space as a blank.

OPERATION WITH AN OPTIONAL TURNTABLE SYSTEM

LISTENING TO RECORD

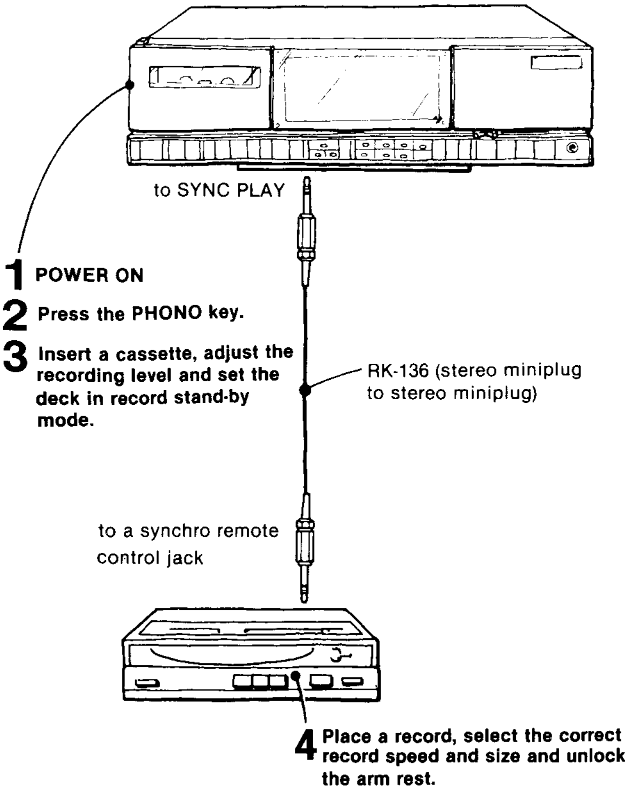
Connect a turntable system as shown on page 13.


4 Adjust the volume and tone.
1 POWER ON
2 Press the PHONO key.
Start the record playing. 3
turntable system

SYNCHRONIZED OPERATION OF THE BUILT-IN CASSETTE DECK WITH THE TURNTABLE SYSTEM

When the XO-1001 is connected to a Sony stereo turntable system equipped with a synchro remote control jack using the optional RK-136 connecting cord, the start and stop of recording will be synchronized with the turntable operation.

Connection and preparation


to SYNC PLAY
1 POWER ON
2 Press the PHONO key.
3 Insert a cassette, adjust the recording level and set the deck in record stand-by mode.
RK-136 (stereo miniplug to stereo miniplug)
to a synchro remote control jack
4 Place a record, select the correct record speed and size and unlock the arm rest.

Recording

	Turntable operation	Synchronized operation of the XO-1001
To start recording	Bring the tonearm over the desired point and press the START/STOP button.	When the tonearm lowers to the record, the pause mode is released and recording begins.
To stop recording	Press the START/STOP button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
When record play ends...	The tonearm returns automatically to the arm rest.	

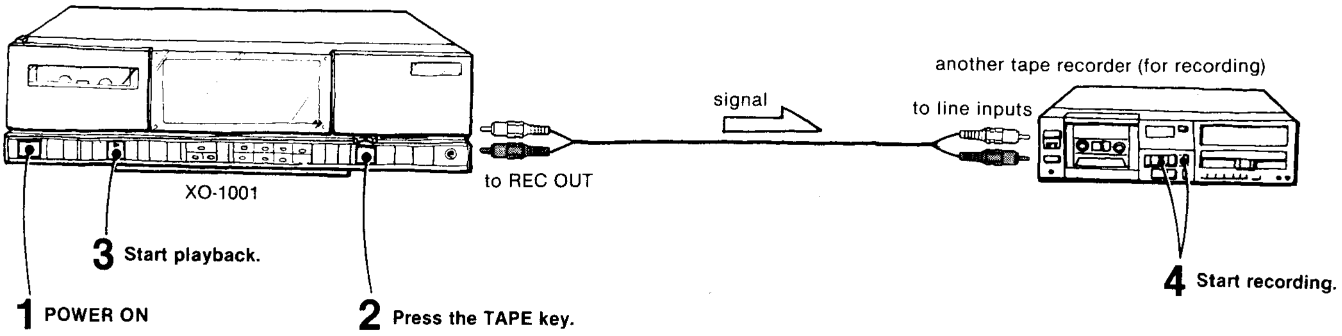
Note: When the tonearm is lifted from or lowered on the turntable connected to the SYNC PLAY jack, a synchro signal is transmitted to the XO-1001 and causes the ❚❚ indicator to blink. This is not a problem.

OPERATION WITH AN EXTERNAL TAPE RECORDER

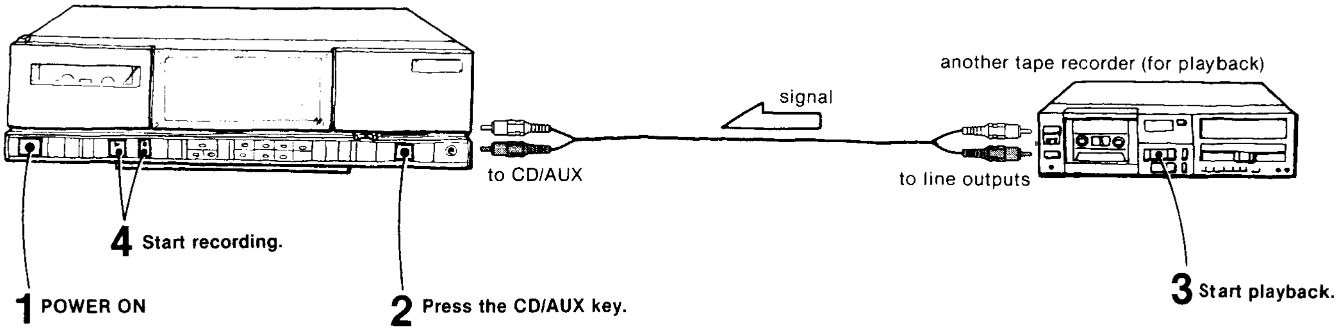
TO COPY A TAPE

Connect an optional tape recorder as shown below.

1 Tape copy from the XO-1001 to another tape recorder

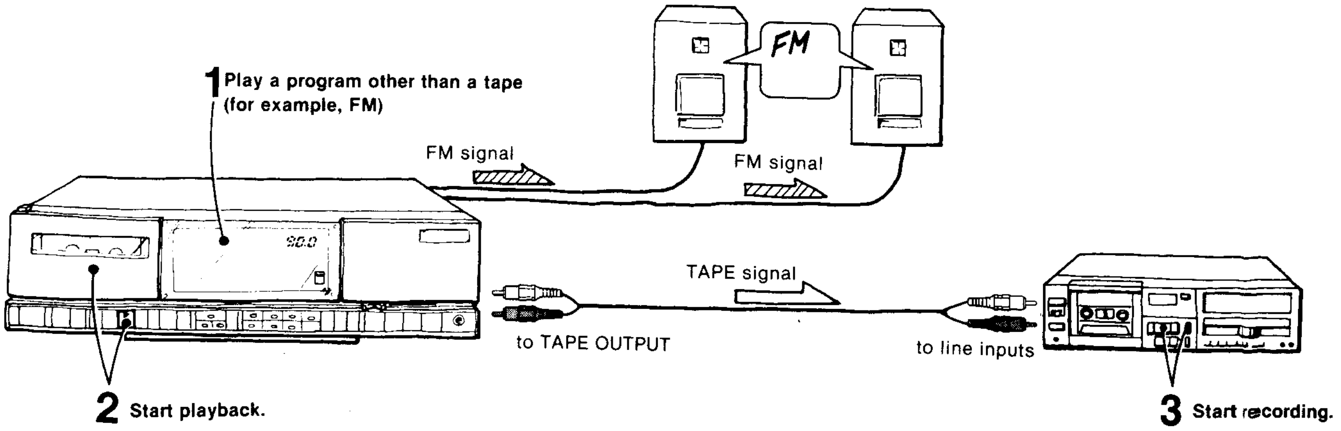

another tape recorder (for recording)
signal
to line inputs
XO-1001
to REC OUT
3 Start playback.
4 Start recording.
1 POWER ON
2 Press the TAPE key.

2 Tape copy from another tape recorder to the XO-1001


another tape recorder (for playback)
signal
to CD/AUX
to line outputs
4 Start recording.
3 Start playback.
1 POWER ON
2 Press the CD/AUX key.

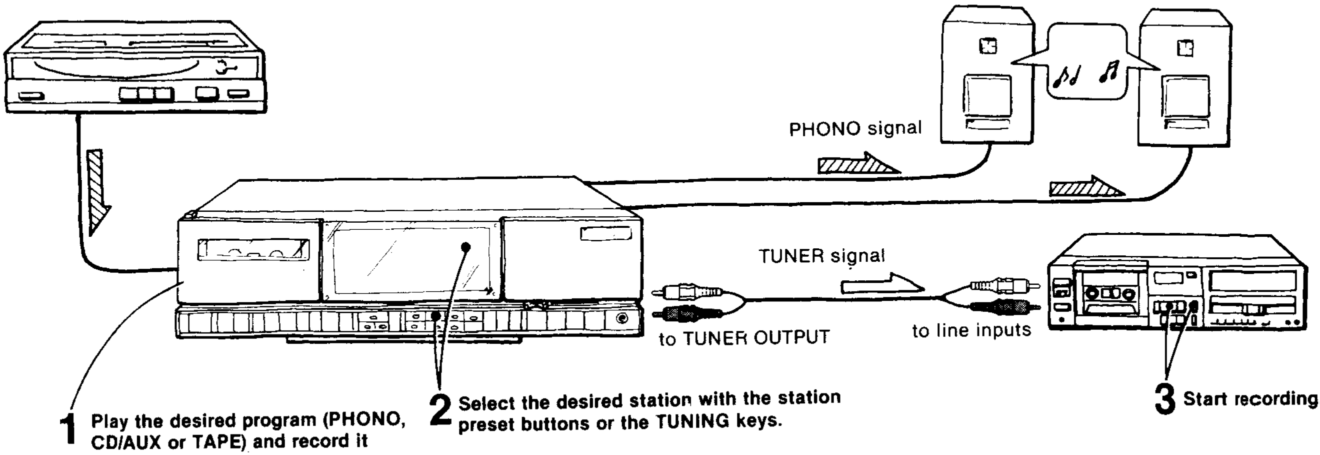
3 Tape copy while listening to a record, a broadcast, or an auxiliary program

The TAPE OUTPUT jacks always supply the output of the built-in cassette deck, independently of the engaged function selector key. If you connect another tape recorder as shown below, you can copy a tape while listening to another program.


FM
1 Play a program other than a tape (for example, FM)
FM signal
FM signal
TAPE signal
to TAPE OUTPUT
to line inputs
2 Start playback.
3 Start recording.

TO RECORD A BROADCAST WHILE LISTENING TO OR RECORDING ANOTHER PROGRAM

The TUNER OUTPUT jacks always supply the output of the built-in tuner independently of the engaged function selector key. If you connect another tape recorder as shown below, you can record a broadcast while listening to a record, a tape or an auxiliary program or even while recording a record or an auxiliary program with the built-in cassette deck.



1 **Play the desired program (PHONO, CD/AUX or TAPE) and record it (PHONO or CD/AUX). (for example, PHONO)**

2 **Select the desired station with the station preset buttons or the TUNING keys.**

3 **Start recording.**

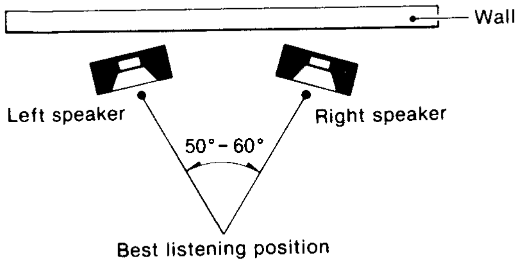
TO OBTAIN AN OPTIMUM SOUND

SPEAKER PLACEMENT

Here are a few suggestions for speaker placement that will assist you in obtaining an installation with satisfactory stereo sound.

Normally, the speakers are placed on the floor against the narrower wall of a room. The bass sounds can then be increased by moving the speakers toward the corners, or decreased by raising the speakers off the floor on suitable pedestals, and/or moving them away from the wall a moderate distance. If the speakers are positioned above the floor, do not place them higher than ear-level while seated, since this produces an unnatural effect.

The distance between speakers, or the speakers and a listener depends mainly on the room size. Generally it is recommended that the speaker/listener relationship be an equilateral triangle configuration (as illustrated).
If the speaker separation is too wide, an undesirable "hole in the middle" effect occurs.



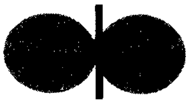
Place the right and left speakers in similar acoustic environments, otherwise you will obtain unbalanced sound. For example, placing one speaker near an open door or archway will decrease the apparent bass from that speaker.

Best sound is usually obtained in a room with carpeting on the floor, heavy draperies and upholstered furniture. Since each room has its own individual acoustic characteristic, which is a function of its size, construction and furnishing, some experimentation with speaker placement is generally necessary before the correct balance on stereo image and bass response is obtained. This will be time we spent, resulting in your enjoyment of the maximum capabilities of your music system.

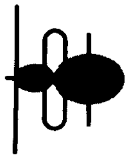
FM ANTENNAS

To get the best from your tuner, it is important to use an outdoor antenna. Be sure to pick an outdoor antenna which suits your location. This is determined by the signal strength, the presence of multipath signals*, and the location of the FM stations.

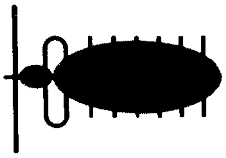
A sony table-top type AN-300 helical FM antenna (optional), which incorporates a tuning circuit, has the same pick-up pattern, with equal front and rear sensitivity, as a ribbon dipole antenna, but it is also liable to pick up extraneous noise. When this antenna is used with this tuner, with the antenna's TUNING MODE switch set to AUTO, the antenna is automatically tuned to the same station as the tuner. This type of antenna is convenient when it is not practical to install an FM outdoor antenna and where the signals are sufficiently strong.



A dipole antenna with reflector has increased sensitivity to front signals and reduced sensitivity to rear signals.



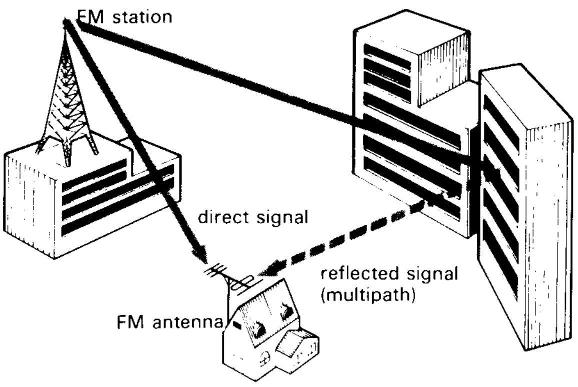
A multi-element type has a narrower pick-up pattern with high frontal sensitivity and superior rejection or rear signals.



FM antenna installation and orientation

- Install the FM antenna as high as possible, keeping it away from TV antennas or others operating in roughly the same frequency range.
- The antenna should be located on the side of your house away from heavy auto traffic to avoid ignition noise interference.
- To obtain good reception from all directions, the use of a remotely-controlled rotatable antenna, or an omnidirectional antenna which picks up signals equally well in all directions, is recommended.

*Multipath signals reflect from hills or structures, reach the receiving antenna perceptibly later in time and cause severe distortion and complete loss of channel separation. Multipath signals can be avoided to a great extent by using a coaxial cable, and a good directional antenna that is correctly oriented.

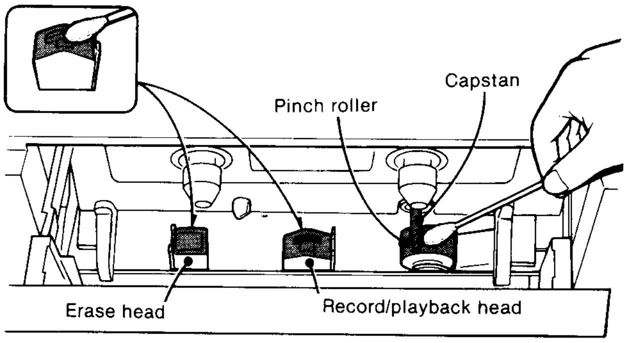


MAINTENANCE

CLEANING OF HEADS AND TAPE PATH

We recommend cleaning after every 10 hours of operation. To make the best possible recordings, however, you should clean all surfaces over which the tape travels before every recording.

1 Press the ⏏ button to open the cassette holder.
2 Wipe the heads, the pinch roller and the capstan with a cleaning tip slightly moistened with cleaning fluid or alcohol.



After cleaning the heads and tape path, do not insert a cassette until the areas cleaned are completely dry.

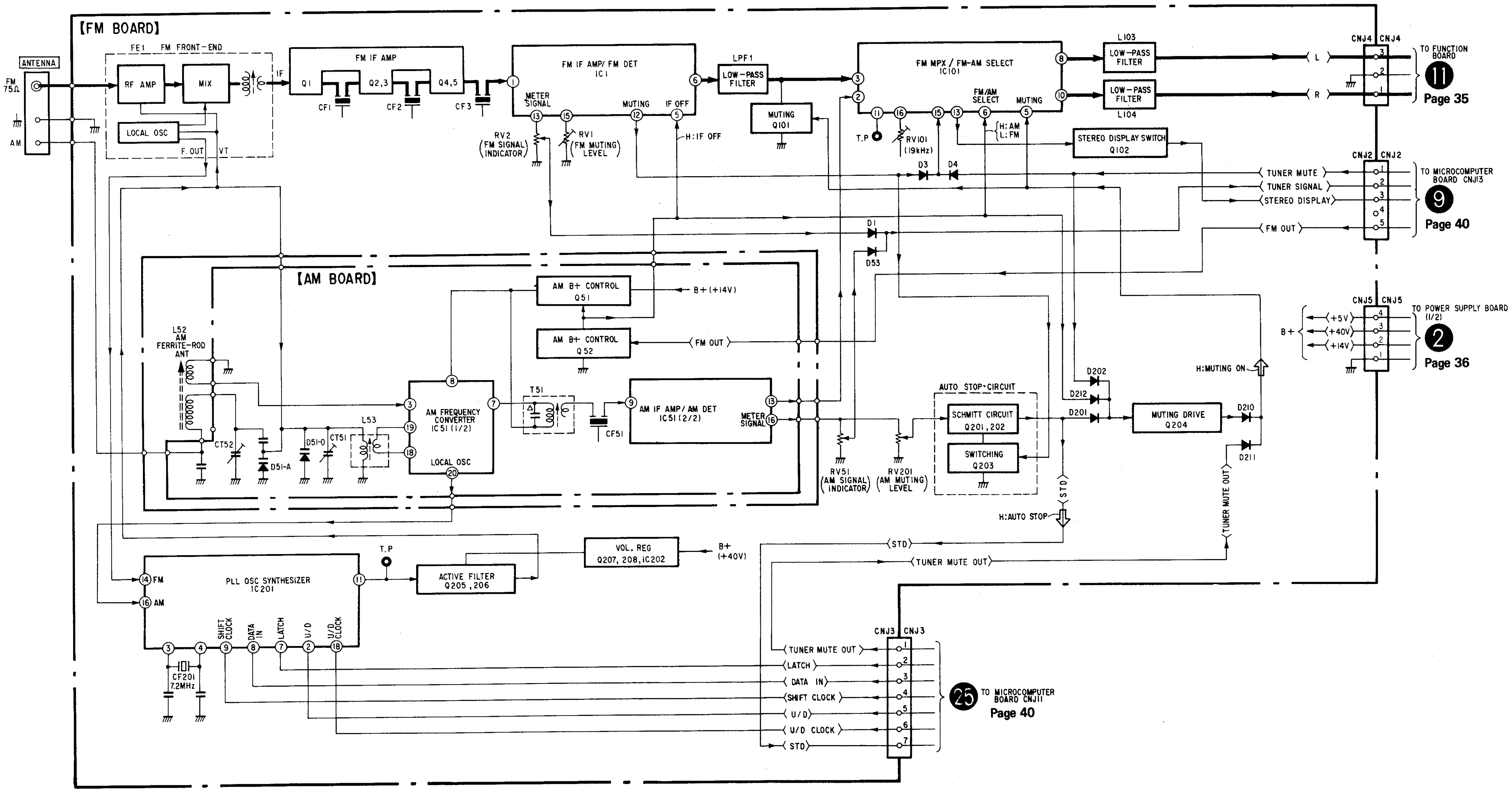
DEMAGNETIZING HEADS

After 20 to 30 hours of use, enough residual magnetism will have built up on the heads to begin to cause loss of high frequencies and hiss. At this time you should demagnetize the heads and all metal parts in the tape path with a commercially available head demagnetizer. Be sure that the receiver POWER ON/STAND BY key is set to STAND BY while you demagnetize.

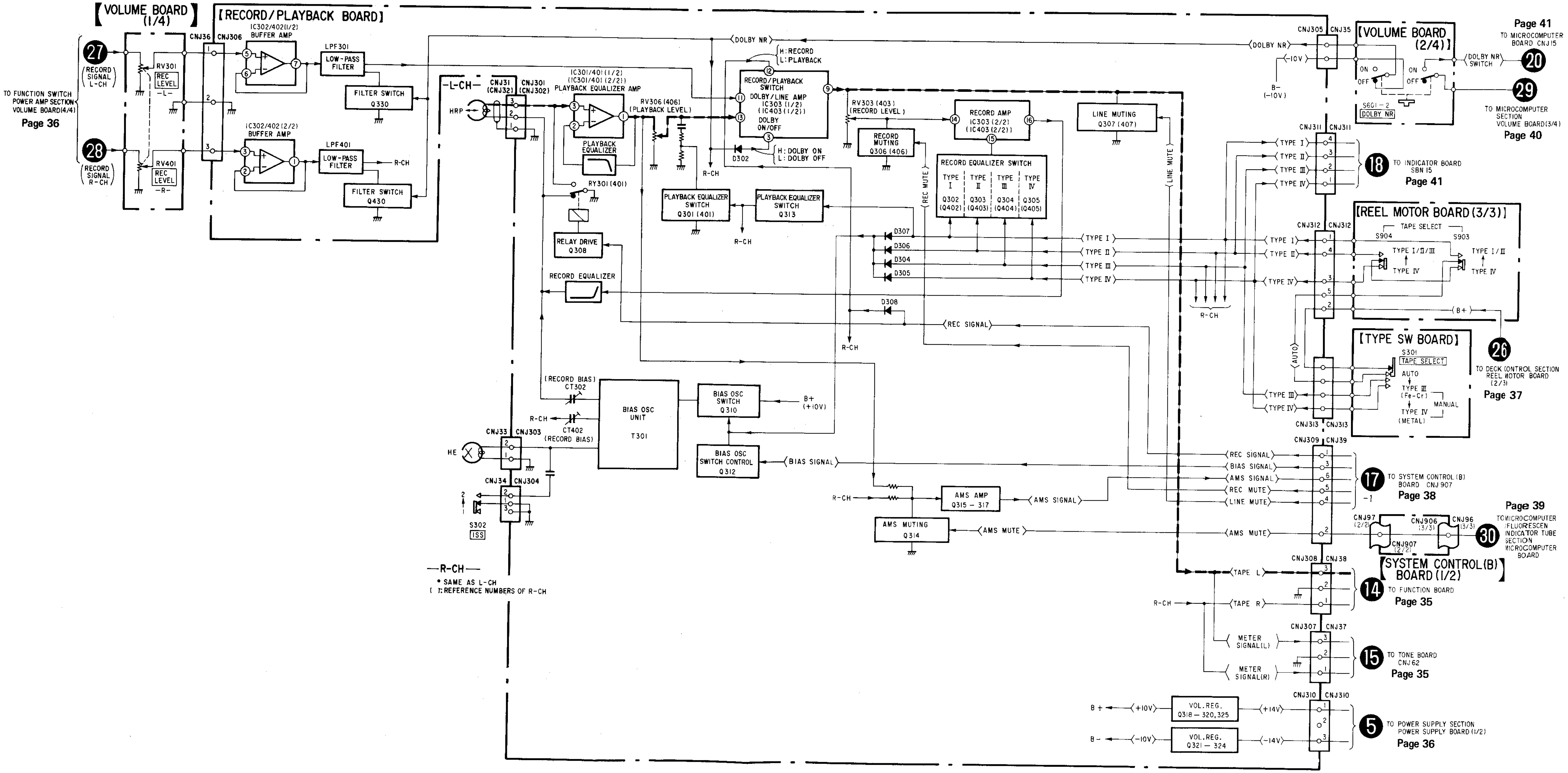
CLEANING THE CABINET

Clean the cabinet, panel and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

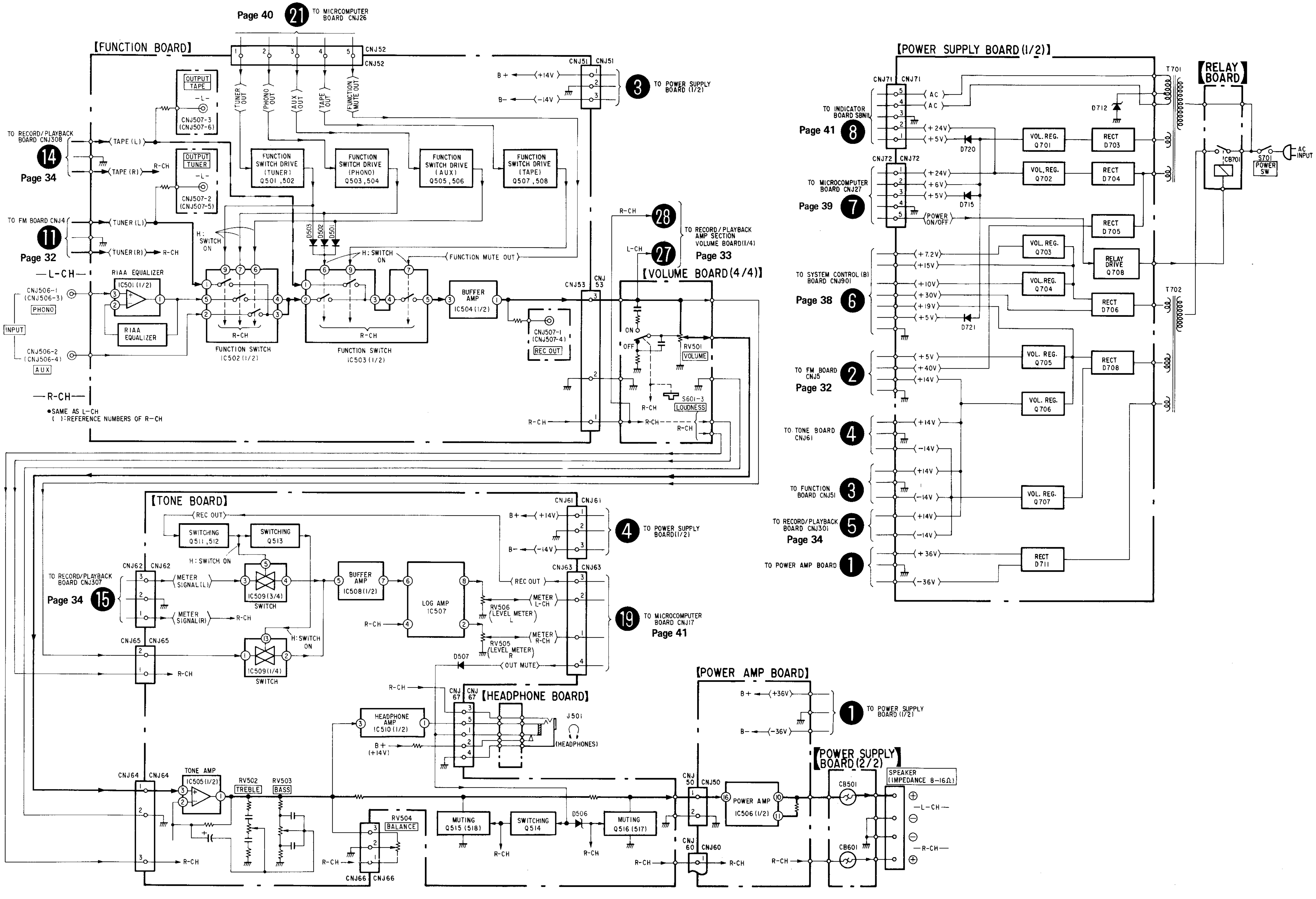
1-4. BLOCK DIAGRAMS – *TUNER SECTION* –


[FM BOARD]
ANTENNA
FM 75Ω
AM
FE1 FM FRONT-END
RF AMP
MIX
LOCAL OSC
F. OUT
VT
IF
FM IF AMP
Q1
Q2,3
Q4,5
CF1
CF2
CF3
FM IF AMP/ FM DET
IC1
METER SIGNAL
MUTING
IF OFF
RV2 (FM SIGNAL INDICATOR)
RV1 (FM MUTING LEVEL)
H: IF OFF
LPF1
LOW-PASS FILTER
MUTING
Q101
FM MPX / FM-AM SELECT
IC101
FM/AM SELECT
H: AM
L: FM
T.P
RV101 (19kHz)
D3
D4
L103
LOW-PASS FILTER
L104
STEREO DISPLAY SWITCH
Q102
CNJ4 CNJ4
L
R
TO FUNCTION BOARD
⑪
Page 35
CNJ2 CNJ2
TUNER MUTE
TUNER SIGNAL
STEREO DISPLAY
FM OUT
TO MICROCOMPUTER BOARD CNJ13
⑨
Page 40
D1
D53
[AM BOARD]
AM B+ CONTROL
Q51
B+ (+14V)
AM B+ CONTROL
Q52
FM OUT
L52 AM FERRITE-ROD ANT
CT52
D51-A
D51-O
CT51
L53
AM FREQUENCY CONVERTER
IC51 (1/2)
LOCAL OSC
T51
CF51
AM IF AMP/ AM DET
IC51 (2/2)
METER SIGNAL
RV51 (AM SIGNAL INDICATOR)
RV201 (AM MUTING LEVEL)
AUTO STOP·CIRCUIT
SCHMITT CIRCUIT
Q201, 202
SWITCHING
Q203
D202
D212
D201
MUTING DRIVE
Q204
D210
D211
H: MUTING ON
H: AUTO STOP
STD
TUNER MUTE OUT
CNJ5 CNJ5
B+
+5V
+40V
+14V
TO POWER SUPPLY BOARD (1/2)
②
Page 36
VOL. REG
Q207, 208, IC202
B+ (+40V)
T.P
ACTIVE FILTER
Q205, 206
PLL OSC SYNTHESIZER
IC201
FM
AM
SHIFT CLOCK
DATA IN
LATCH
U/D
U/D CLOCK
CF201 7.2MHz
STD
TUNER MUTE OUT
CNJ3 CNJ3
TUNER MUTE OUT
LATCH
DATA IN
SHIFT CLOCK
U/D
U/D CLOCK
STD
㉕
TO MICROCOMPUTER BOARD CNJ11
Page 40

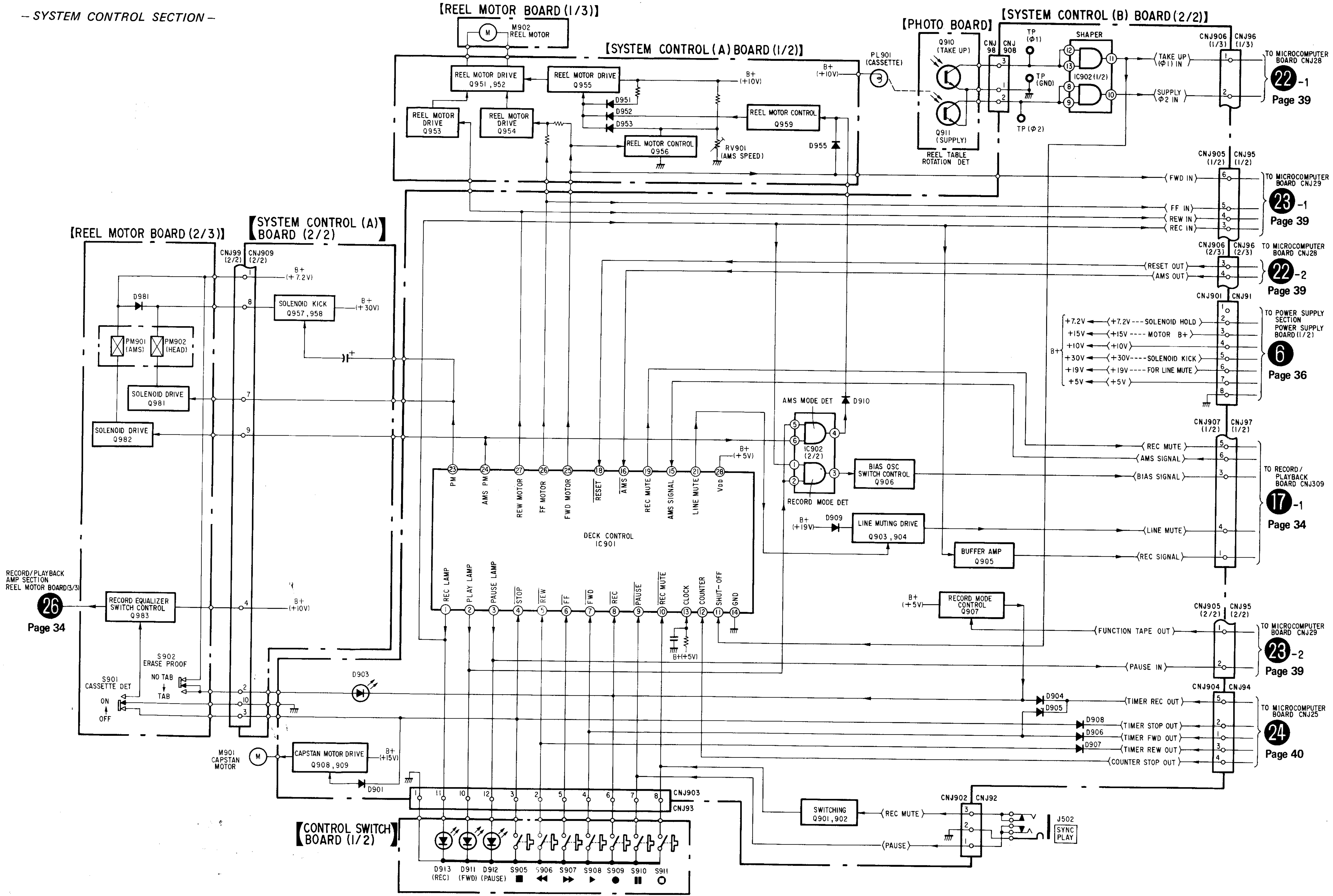
– RECORD/PLAYBACK AMP SECTION –


[VOLUME BOARD] (1/4)
[RECORD/PLAYBACK BOARD]
TO FUNCTION SWITCH POWER AMP SECTION VOLUME BOARD(4/4)
Page 36
27
(RECORD SIGNAL L-CH)
28
(RECORD SIGNAL R-CH)
RV301 REC LEVEL -L-
RV401 REC LEVEL -R-
CNJ36
CNJ306
IC302/402(1/2) BUFFER AMP
IC302/402(2/2) BUFFER AMP
LPF301 LOW-PASS FILTER
LPF401 LOW-PASS FILTER
FILTER SWITCH Q330
FILTER SWITCH Q430
R-CH
-L-CH-
CNJ31 (CNJ32)
CNJ301 (CNJ302)
HRP
IC301/401(1/2) (IC301/401(2/2)) PLAYBACK EQUALIZER AMP
PLAYBACK EQUALIZER
RY301(401)
RELAY DRIVE Q308
RECORD EQUALIZER
RV306(406) (PLAYBACK LEVEL)
PLAYBACK EQUALIZER SWITCH Q301(401)
PLAYBACK EQUALIZER SWITCH Q313
DOLBY NR
H: RECORD L: PLAYBACK
RECORD/PLAYBACK SWITCH DOLBY/LINE AMP IC303(1/2) (IC403(1/2)) DOLBY ON/OFF
H: DOLBY ON L: DOLBY OFF
D302
RV303(403) (RECORD LEVEL)
RECORD MUTING Q306(406)
RECORD AMP IC303(2/2) (IC403(2/2))
LINE MUTING Q307(407)
RECORD EQUALIZER SWITCH
TYPE I TYPE II TYPE III TYPE IV
Q302 (Q402) Q303 (Q403) Q304 (Q404) Q305 (Q405)
(REC MUTE)
(LINE MUTE)
D307 D306 D304 D305 D308
TYPE I TYPE II TYPE III TYPE IV
REC SIGNAL
(RECORD BIAS) CT302
CT402 (RECORD BIAS)
BIAS OSC UNIT T301
BIAS OSC SWITCH Q310
B+ (+10V)
BIAS OSC SWITCH CONTROL Q312
BIAS SIGNAL
CNJ33 CNJ303
HE
CNJ34 CNJ304
S302 ISS
AMS AMP Q315 – 317
AMS SIGNAL
AMS MUTING Q314
AMS MUTE
—R-CH—
• SAME AS L-CH
( ): REFERENCE NUMBERS OF R-CH
CNJ305 CNJ35
[VOLUME BOARD] (2/4)
DOLBY NR
-10V
B- (-10V)
ON OFF
S601-2 DOLBY NR
DOLBY NR SWITCH
Page 41
TO MICROCOMPUTER BOARD CNJ15
20
29
TO MICROCOMPUTER SECTION VOLUME BOARD(3/4)
Page 40
CNJ311 CNJ311
18
TO INDICATOR BOARD SBN15
Page 41
[REEL MOTOR BOARD(3/3)]
CNJ312 CNJ312
TAPE SELECT
S904 S903
TYPE I/II/III TYPE IV
TYPE I/II TYPE IV
B+
R-CH
[TYPE SW BOARD]
S301 TAPE SELECT
AUTO
TYPE III (Fe-Cr)
MANUAL
TYPE IV (METAL)
(AUTO)
CNJ313 CNJ313
26
TO DECK CONTROL SECTION REEL MOTOR BOARD (2/3)
Page 37
CNJ309 CNJ39
REC SIGNAL
BIAS SIGNAL
AMS SIGNAL
REC MUTE
LINE MUTE
AMS MUTE
17
TO SYSTEM CONTROL (B) BOARD CNJ907
-1
Page 38
CNJ97 (2/2)
CNJ906 (3/3)
CNJ96 (3/3)
CNJ907 (2/2)
30
Page 39
TO MICROCOMPUTER FLUORESCEN INDICATOR TUBE SECTION MICROCOMPUTER BOARD
[SYSTEM CONTROL(B) BOARD(1/2)]
CNJ308 CNJ38
TAPE L
TAPE R
14
TO FUNCTION BOARD
Page 35
CNJ307 CNJ37
METER SIGNAL(L)
METER SIGNAL(R)
15
TO TONE BOARD CNJ62
Page 35
CNJ310 CNJ310
B+ (+10V) VOL.REG. Q318 – 320, 325 (+14V)
B- (-10V) VOL.REG. Q321 – 324 (-14V)
5
TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)
Page 36

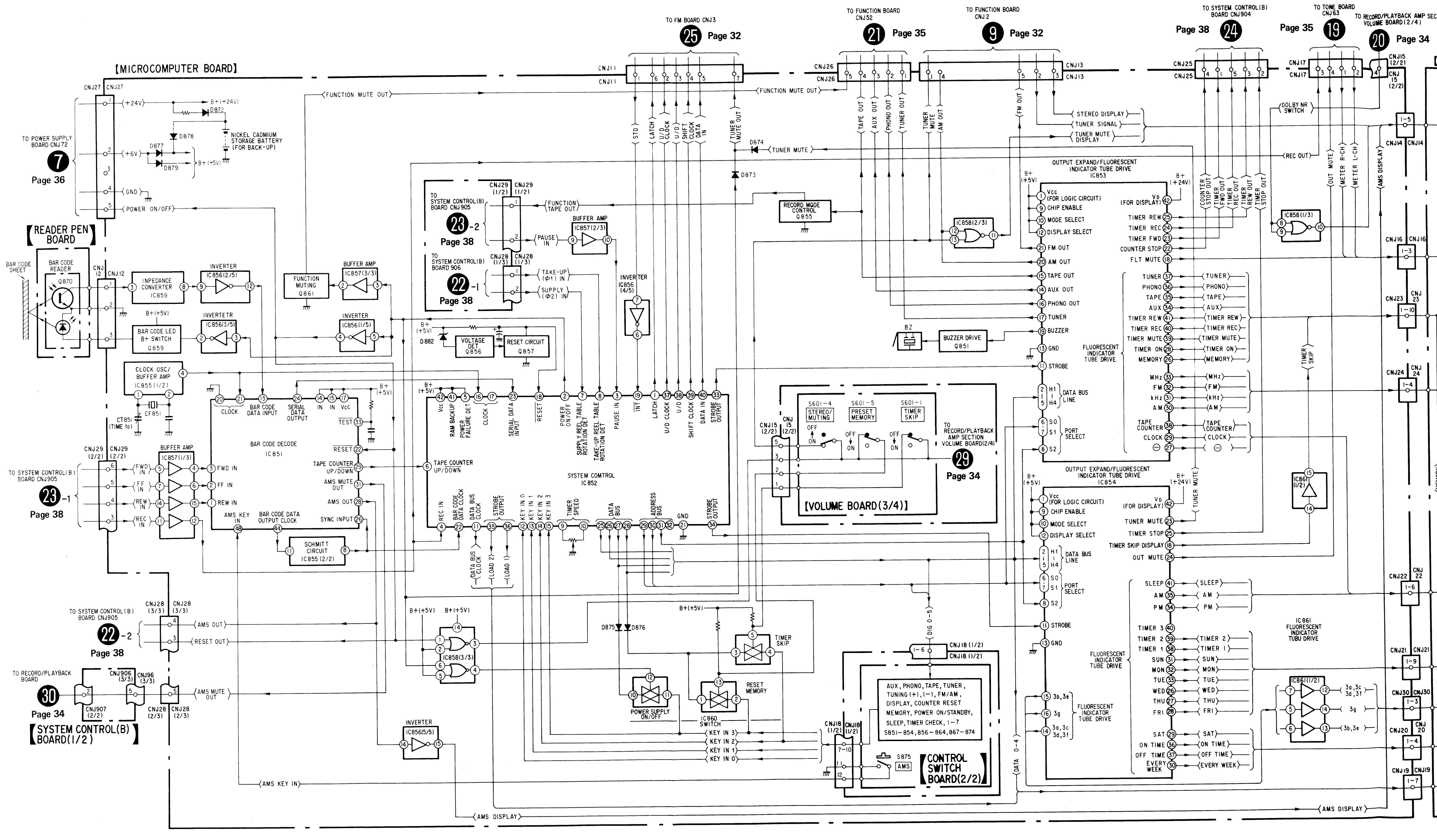
– FUNCTION SWITCH/POWER AMP/POWER SUPPLY SECTION –


Page 40 ㉑ TO MICROCOMPUTER BOARD CNJ26
【FUNCTION BOARD】
CNJ52
(TUNER OUT) (PHONO OUT) (AUX OUT) (TAPE OUT) (FUNCTION MUTE OUT)
CNJ51 CNJ51
B+ (+14V)
B- (-14V)
③ TO POWER SUPPLY BOARD (1/2)
TO RECORD/PLAYBACK BOARD CNJ308
⑭ Page 34
TAPE (L)
TAPE (R) R-CH
OUTPUT TAPE -L- CNJ507-3 (CNJ507-6)
OUTPUT TUNER -L- CNJ507-2 (CNJ507-5)
FUNCTION SWITCH DRIVE (TUNER) Q501, 502
FUNCTION SWITCH DRIVE (PHONO) Q503, 504
FUNCTION SWITCH DRIVE (AUX) Q505, 506
FUNCTION SWITCH DRIVE (TAPE) Q507, 508
TO FM BOARD CNJ4
⑪ Page 32
TUNER (L)
TUNER (R) R-CH
H: SWITCH ON
D503 D502 D501
H: SWITCH ON
FUNCTION MUTE OUT
—L-CH—
RIAA EQUALIZER
IC501 (1/2)
RIAA EQUALIZER
CNJ506-1 (CNJ506-3) PHONO
INPUT
CNJ506-2 (CNJ506-4) AUX
—R-CH—
●SAME AS L-CH
( ):REFERENCE NUMBERS OF R-CH
R-CH
FUNCTION SWITCH IC502 (1/2)
FUNCTION SWITCH IC503 (1/2)
BUFFER AMP IC504 (1/2)
CNJ507-1 (CNJ507-4) REC OUT
CNJ53 CNJ 53
R-CH ㉘
L-CH ㉗
TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD (1/4) Page 33
【VOLUME BOARD (4/4)】
ON OFF
RV501 VOLUME
S601-3 LOUDNESS
R-CH
【POWER SUPPLY BOARD (1/2)】
CNJ71 CNJ71
AC AC
(+24V) (+5V)
TO INDICATOR BOARD SBNIL
Page 41 ⑧
D712 D720
VOL. REG. Q701
RECT D703
T701
【RELAY BOARD】
CB701
S701 POWER SW
AC INPUT
CNJ72 CNJ72
(+24V) (+6V) (+5V) (POWER ON/OFF)
TO MICROCOMPUTER BOARD CNJ27
Page 39 ⑦
D715
VOL. REG. Q702
RECT D704
RECT D705
(+7.2V) (+15V) (+10V) (+30V) (+19V) (+5V)
TO SYSTEM CONTROL (B) BOARD CNJ901
Page 38 ⑥
VOL. REG. Q703
RELAY DRIVE Q708
VOL. REG. Q704
RECT D706
D721
T702
(+5V) (+40V) (+14V)
TO FM BOARD CNJ5
Page 32 ②
VOL. REG. Q705
RECT D708
VOL. REG. Q706
(+14V) (-14V)
TO TONE BOARD CNJ61 ④
(+14V) (-14V)
TO FUNCTION BOARD CNJ51 ③
VOL. REG. Q707
(+14V) (-14V)
TO RECORD/PLAYBACK BOARD CNJ301
Page 34 ⑤
(+36V) (-36V)
TO POWER AMP BOARD ❶
RECT D711
【TONE BOARD】
CNJ61 CNJ61
B+ (+14V)
B- (-14V)
④ TO POWER SUPPLY BOARD (1/2)
REC OUT
SWITCHING Q511, 512
SWITCHING Q513
H: SWITCH ON
CNJ62 CNJ62
TO RECORD/PLAYBACK BOARD CNJ307
Page 34 ⑮
METER SIGNAL (L)
METER SIGNAL (R) R-CH
IC509 (3/4) SWITCH
BUFFER AMP IC508 (1/2)
LOG AMP IC507
R-CH
CNJ63 CNJ63
REC OUT
METER L-CH
RV506 LEVEL METER L
METER R-CH
RV505 LEVEL METER R
⑲ TO MICROCOMPUTER BOARD CNJ17 Page 41
CNJ65 CNJ65
R-CH
H: SWITCH ON
IC509 (1/4) SWITCH
D507
OUT MUTE
R-CH
CNJ67 CNJ67
【HEADPHONE BOARD】
HEADPHONE AMP IC510 (1/2)
B+ (+14V)
J501 (HEADPHONES)
CNJ64 CNJ64
TONE AMP IC505 (1/2)
RV502 TREBLE
RV503 BASS
RV504 BALANCE
CNJ66 CNJ66
R-CH
MUTING Q515 (518)
SWITCHING Q514
D506
MUTING Q516 (517)
R-CH
【POWER AMP BOARD】
B+ (+36V)
B- (-36V)
❶ TO POWER SUPPLY BOARD (1/2)
CNJ50 CNJ50
POWER AMP IC506 (1/2)
CNJ60 CNJ60
R-CH
【POWER SUPPLY BOARD (2/2)】
CB501
CB601
SPEAKER (IMPEDANCE 8-16Ω)
—L-CH—
—R-CH—
⊕ ⊖ ⊖ ⊕

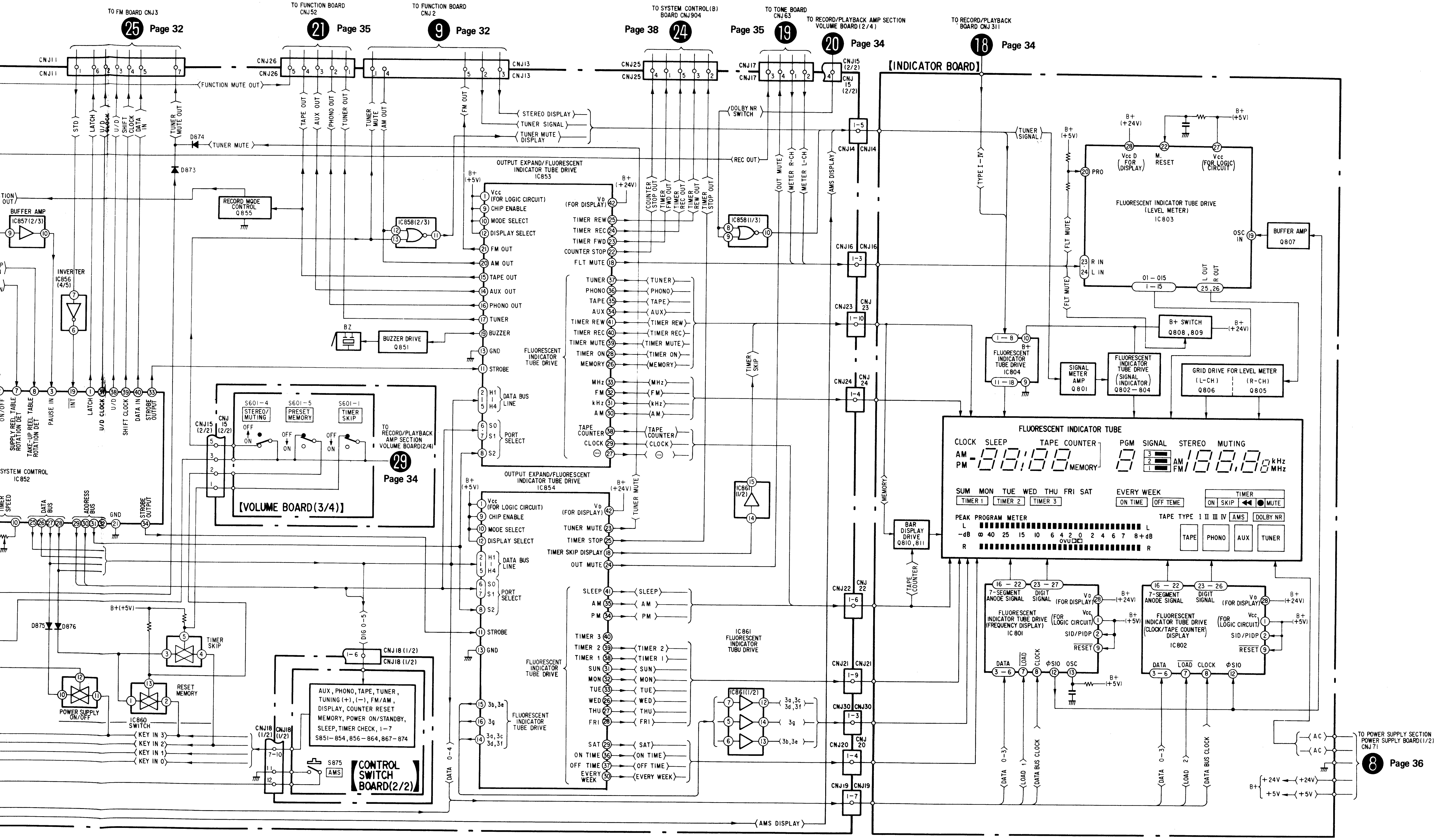
– SYSTEM CONTROL SECTION –


[REEL MOTOR BOARD (1/3)]
M902 REEL MOTOR
[SYSTEM CONTROL (A) BOARD (1/2)]
REEL MOTOR DRIVE Q951, 952
REEL MOTOR DRIVE Q955
REEL MOTOR DRIVE Q953
REEL MOTOR DRIVE Q954
D951
D952
D953
REEL MOTOR CONTROL Q956
REEL MOTOR CONTROL Q959
RV901 (AMS SPEED)
D955
B+ (+10V)
PL901 (CASSETTE)
[PHOTO BOARD]
Q910 (TAKE UP)
Q911 (SUPPLY)
REEL TABLE ROTATION DET
CNJ 98
CNJ 908
TP (Φ1)
TP (GND)
TP (Φ2)
[SYSTEM CONTROL (B) BOARD (2/2)]
SHAPER
IC902 (1/2)
CNJ906 (1/3)
CNJ96 (1/3)
TAKE UP (Φ1) IN
SUPPLY Φ2 IN
TO MICROCOMPUTER BOARD CNJ28
22-1
Page 39
CNJ905 (1/2)
CNJ95 (1/2)
FWD IN
FF IN
REW IN
REC IN
TO MICROCOMPUTER BOARD CNJ29
23-1
Page 39
CNJ906 (2/3)
CNJ96 (2/3)
RESET OUT
AMS OUT
TO MICROCOMPUTER BOARD CNJ28
22-2
Page 39
CNJ901
CNJ91
+7.2V — +7.2V — SOLENOID HOLD
+15V — +15V — MOTOR B+
+10V — +10V
+30V — +30V — SOLENOID KICK
+19V — +19V — FOR LINE MUTE
+5V — +5V
B+
TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)
6
Page 36
CNJ907 (1/2)
CNJ97 (1/2)
REC MUTE
AMS SIGNAL
BIAS SIGNAL
LINE MUTE
REC SIGNAL
TO RECORD/PLAYBACK BOARD CNJ309
17-1
Page 34
AMS MODE DET
D910
IC902 (2/2)
RECORD MODE DET
BIAS OSC SWITCH CONTROL Q906
B+ (+19V)
D909
LINE MUTING DRIVE Q903, 904
BUFFER AMP Q905
B+ (+5V)
RECORD MODE CONTROL Q907
CNJ905 (2/2)
CNJ95 (2/2)
FUNCTION TAPE OUT
PAUSE IN
TO MICROCOMPUTER BOARD CNJ29
23-2
Page 39
CNJ904
CNJ94
D904
D905
D908
D906
D907
TIMER REC OUT
TIMER STOP OUT
TIMER FWD OUT
TIMER REW OUT
COUNTER STOP OUT
TO MICROCOMPUTER BOARD CNJ25
24
Page 40
[REEL MOTOR BOARD (2/3)]
[SYSTEM CONTROL (A) BOARD (2/2)]
CNJ99 (2/2)
CNJ909 (2/2)
B+ (+7.2V)
D981
SOLENOID KICK Q957, 958
B+ (+30V)
PM901 (AMS)
PM902 (HEAD)
SOLENOID DRIVE Q981
SOLENOID DRIVE Q982
RECORD/PLAYBACK AMP SECTION REEL MOTOR BOARD (3/3)
26
Page 34
RECORD EQUALIZER SWITCH CONTROL Q983
B+ (+10V)
S902 ERASE PROOF
NO TAB
TAB
S901 CASSETTE DET
ON
OFF
D903
M901 CAPSTAN MOTOR
CAPSTAN MOTOR DRIVE Q908, 909
B+ (+15V)
D901
B+ (+5V)
PM
AMS PM
REW MOTOR
FF MOTOR
FWD MOTOR
RESET
AMS
REC MUTE
AMS SIGNAL
LINE MUTE
VDD
DECK CONTROL IC901
REC LAMP
PLAY LAMP
PAUSE LAMP
STOP
REW
FF
FWD
REC
PAUSE
REC MUTE
CLOCK
COUNTER
SHUT-OFF
GND
CNJ903
CNJ93
[CONTROL SWITCH BOARD (1/2)]
D913 (REC)
D911 (FWD)
D912 (PAUSE)
S905 ■
S906 ◀◀
S907 ▶▶
S908 ▶
S909 ●
S910 ❚❚
S911 ○
SWITCHING Q901, 902
REC MUTE
PAUSE
CNJ902
CNJ92
J502 SYNC PLAY

– MICROCOMPUTER/INDICATOR SECTION –



[MICROCOMPUTER BOARD]
TO POWER SUPPLY BOARD CNJ72
7 Page 36
CNJ27
(+24V)
B+(+24V)
D872
D878
NICKEL CADMIUM STORAGE BATTERY (FOR BACK-UP)
D877
D879
(+6V)
B+(+5V)
(GND)
(POWER ON/OFF)
[READER PEN BOARD]
BAR CODE SHEET
BAR CODE READER
Q870
CNJ12
INPEDANCE CONVERTER IC859
INVERTER IC856(2/5)
BAR CODE LED B+ SWITCH Q859
INVERTETR IC856(3/5)
FUNCTION MUTING Q861
BUFFER AMP IC857(3/3)
INVERTER IC856(1/5)
(FUNCTION MUTE OUT)
CLOCK OSC/ BUFFER AMP IC855(1/2)
CT851 (TIME fo)
CF851
CNJ29 (2/2)
TO SYSTEM CONTROL(B) BOARD CNJ905
23-1 Page 38
BUFFER AMP IC857(1/3)
(FWD IN) (FF IN) (REW IN) (REC IN)
FWD IN
FF IN
REW IN
BAR CODE DECODE IC851
CLOCK
BAR CODE DATA INPUT
SERIAL DATA OUTPUT
IN IN Vcc
TEST
RESET
TAPE COUNTER UP/DOWN
AMS MUTE OUT
AMS OUT
SYNC INPUT
AMS KEY IN
BAR CODE DATA OUTPUT CLOCK
SCHMITT CIRCUIT IC855(2/2)
TO SYSTEM CONTROL(B) BOARD CNJ905
22-2 Page 38
CNJ28 (3/3)
(AMS OUT)
(RESET OUT)
TO RECORD/PLAYBACK BOARD
30 Page 34
CNJ906 (3/3)
CNJ96 (3/3)
CNJ907 (2/2)
CNJ28 (2/3)
(AMS MUTE OUT)
[SYSTEM CONTROL(B) BOARD(1/2)]
(AMS KEY IN)
(AMS DISPLAY)
TO SYSTEM CONTROL(B) BOARD CNJ905
23-2 Page 38
CNJ29 (1/2)
(FUNCTION TAPE OUT)
BUFFER AMP IC857(2/3)
(PAUSE IN)
TO SYSTEM CONTROL(B) BOARD 906
22-1 Page 38
CNJ28 (1/3)
(TAKE-UP (Φ1) IN)
(SUPPLY (Φ2) IN)
VOLTAGE DET Q856
RESET CIRCUIT Q857
D882
SYSTEM COMTROL IC852
Vcc
RAM BACKUP
POWER FAILURE DET
CLOCK
SERIAL DATA INPUT
RESET
POWER ON/OFF
SUPPLY REEL TABLE ROTATION DET
TAKE-UP REEL TABLE ROTATION DET
PAUSE IN
INT
LATCH
U/D CLOCK
U/D
SHIFT CLOCK
DATA IN
STROBE OUTPUT
TAPE COUNTER UP/DOWN
REC IN
BAR CODE DATA CLOCK
DATA BUS CLOCK
STROBE OUTPUT
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
TIMER SPEED
DATA BUS
ADDRESS BUS
GND
STROBE OUTPUT
(DATA BUS CLOCK)
(LOAD 2)
(LOAD 1)
IC858(3/3)
INVERTER IC856(5/5)
D875 D876
POWER SUPPLY ON/OFF
IC860 SWITCH
TIMER SKIP
RESET MEMORY
(KEY IN 3) (KEY IN 2) (KEY IN 1) (KEY IN 0)
TO FM BOARD CNJ3
25 Page 32
CNJ11
STD
LATCH
U/D CLOCK
U/D
SHIFT CLOCK
DATA IN
TUNER MUTE OUT
D874
(TUNER MUTE)
D873
INVERTER IC856 (4/5)
RECORD MODE CONTROL Q855
TO FUNCTION BOARD CNJ52
21 Page 35
CNJ26
(FUNCTION MUTE OUT)
TAPE OUT
AUX OUT
PHONO OUT
TUNER OUT
TO FUNCTION BOARD CNJ2
9 Page 32
CNJ13
TUNER MUTE
AM OUT
FM OUT
(STEREO DISPLAY)
(TUNER SIGNAL)
(TUNER MUTE DISPLAY)
IC858(2/3)
BZ
BUZZER DRIVE Q851
CNJ15 (2/2)
S601-4 STEREO/MUTING
S601-5 PRESET MEMORY
S601-1 TIMER SKIP
OFF ON
TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD(2/4)
29 Page 34
[VOLUME BOARD(3/4)]
DIG 0-5
CNJ18 (1/2)
AUX, PHONO, TAPE, TUNER, TUNING (+), (−), FM/AM, DISPLAY, COUNTER RESET MEMORY, POWER ON/STANDBY, SLEEP, TIMER CHECK, 1-7
S851-854, 856-864, 867-874
S875 AMS
[CONTROL SWITCH BOARD(2/2)]
DATA 0-4
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE IC853
B+ (+5V)
B+ (+24V)
Vcc (FOR LOGIC CIRCUIT)
CHIP ENABLE
MODE SELECT
DISPLAY SELECT
FM OUT
AM OUT
TAPE OUT
AUX OUT
PHONO OUT
TUNER
BUZZER
GND
STROBE
H1 H4 DATA BUS LINE
S0 S1 S2 PORT SELECT
Vo (FOR DISPLAY)
TIMER REW
TIMER REC
TIMER FWD
COUNTER STOP
FLT MUTE
FLUORESCENT INDICATOR TUBE DRIVE
TUNER PHONO TAPE AUX TIMER REW TIMER REC TIMER MUTE TIMER ON MEMORY
MHz FM kHz AM
TAPE COUNTER
CLOCK
⊖
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE IC854
TUNER MUTE
TIMER STOP
TIMER SKIP DISPLAY
OUT MUTE
SLEEP AM PM
TIMER 3 TIMER 2 TIMER 1 SUN MON TUE WED THU FRI
SAT ON TIME OFF TIME EVERY WEEK
3b,3e 3g 3a,3c 3d,3f
TO SYSTEM CONTROL(B) BOARD CNJ904
24 Page 38
CNJ25
COUNTER STOP OUT
TIMER FWD OUT
TIMER REC OUT
TIMER REW OUT
TIMER STOP OUT
TO TONE BOARD CNJ63
19 Page 35
CNJ17
(DOLBY NR SWITCH)
(REC OUT)
OUT MUTE
METER R-CH
METER L-CH
TO RECORD/PLAYBACK AMP SEC VOLUME BOARD(2/4)
20 Page 34
CNJ15 (2/2)
AMS DISPLAY
IC858(1/3)
TIMER SKIP
IC861 (1/2)
IC861 FLUORESCENT INDICATOR TUBU DRIVE
IC861(1/2)
CNJ14 CNJ16 CNJ23 CNJ24 CNJ22 CNJ21 CNJ30 CNJ20 CNJ19
I-5 I-3 I-10 I-4 I-6 I-9 I-3 I-4 I-7 I-6 7-10

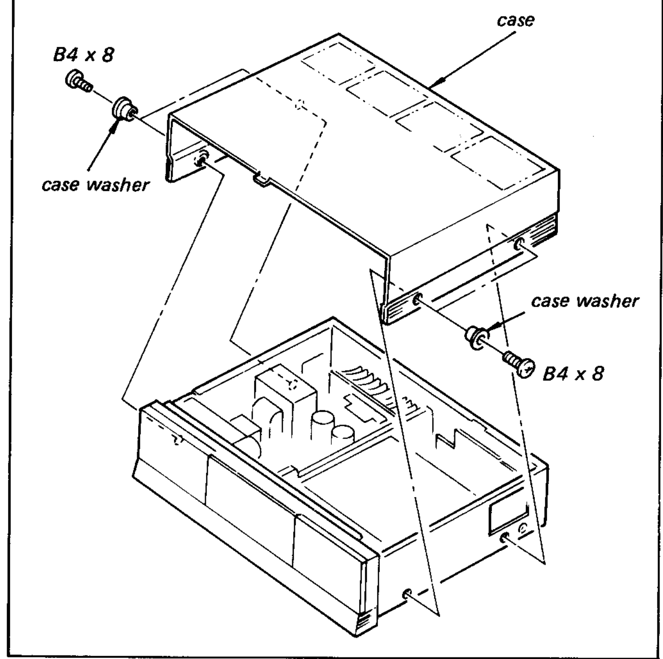

TO FM BOARD CNJ3
25 Page 32
TO FUNCTION BOARD CNJ52
21 Page 35
TO FUNCTION BOARD CNJ2
9 Page 32
TO SYSTEM CONTROL(B) BOARD CNJ904
Page 38 24
TO TONE BOARD CNJ63
Page 35 19
TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD(2/4)
20 Page 34
TO RECORD/PLAYBACK BOARD CNJ311
18 Page 34
[INDICATOR BOARD]
CNJ11
CNJ26
CNJ13
CNJ25
CNJ17
CNJ15 (2/2)
FUNCTION MUTE OUT
STD
LATCH
U/D CLOCK
U/D
SHIFT CLOCK
DATA IN
TUNER MUTE OUT
TAPE OUT
AUX OUT
PHONO OUT
TUNER OUT
TUNER MUTE
AM OUT
FM OUT
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE DISPLAY
D674
D873
TUNER MUTE
DOLBY NR SWITCH
REC OUT
OUT MUTE
METER R-CH
METER L-CH
AMS DISPLAY
TYPE I～IV
TUNER SIGNAL
BUFFER AMP
IC857(2/3)
INVERTER IC856 (4/5)
RECORD MODE CONTROL Q855
IC858(2/3)
IC858(1/3)
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE IC853
Vcc (FOR LOGIC CIRCUIT)
CHIP ENABLE
MODE SELECT
DISPLAY SELECT
FM OUT
AM OUT
TAPE OUT
AUX OUT
PHONO OUT
TUNER
BUZZER
GND
STROBE
DATA BUS LINE
PORT SELECT
VD (FOR DISPLAY)
TIMER REW
TIMER REC
TIMER FWD
COUNTER STOP
FLT MUTE
COUNTER STOP OUT
TIMER FWD OUT
TIMER REC OUT
TIMER REW OUT
TIMER STOP OUT
TUNER
PHONO
TAPE
AUX
TIMER MUTE
TIMER ON
MEMORY
MHz
FM
kHz
AM
TAPE COUNTER
CLOCK
FLUORESCENT INDICATOR TUBE DRIVE
BZ
BUZZER DRIVE Q851
ON/OFF
SUPPLY REEL TABLE ROTATION DET
TAKE-UP REEL TABLE ROTATION DET
PAUSE IN
INT
LATCH
U/D CLOCK
SHIFT CLOCK
DATA IN
STROBE OUTPUT
SYSTEM CONTROL IC852
TIMER SPEED
DATA BUS
ADDRESS BUS
GND
STROBE OUTPUT
CNJ15 (2/2)
S601-4 STEREO/MUTING
S601-5 PRESET MEMORY
S601-1 TIMER SKIP
OFF ON
TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD(2/4)
29 Page 34
[VOLUME BOARD(3/4)]
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE IC854
TUNER MUTE
TIMER STOP
TIMER SKIP DISPLAY
OUT MUTE
SLEEP
AM
PM
TIMER 3
TIMER 2
TIMER 1
SUN
MON
TUE
WED
THU
FRI
SAT
ON TIME
OFF TIME
EVERY WEEK
3b,3e
3g
3a,3c 3d,3f
DATA 0-4
DIG 0-5
B+(+5V)
D875 D876
TIMER SKIP
RESET MEMORY
POWER SUPPLY ON/OFF
IC860 SWITCH
KEY IN 3
KEY IN 2
KEY IN 1
KEY IN 0
CNJ18 (1/2)
AUX, PHONO, TAPE, TUNER, TUNING (+), (−), FM/AM, DISPLAY, COUNTER RESET MEMORY, POWER ON/STANDBY, SLEEP, TIMER CHECK, 1-7
S851-854, 856-864, 867-874
S875 AMS
CONTROL SWITCH BOARD(2/2)
TIMER SKIP
IC861 (1/2)
IC861 FLUORESCENT INDICATOR TUBU DRIVE
IC861(1/2)
CNJ14
CNJ16
CNJ23
CNJ24
CNJ22
CNJ21
CNJ30
CNJ20
CNJ19
MEMORY
BAR DISPLAY DRIVE Q810, 811
TAPE COUNTER
AMS DISPLAY
FLT MUTE
B+ (+24V)
B+ (+5V)
Vcc D (FOR DISPLAY)
M. RESET
Vcc (FOR LOGIC CIRCUIT)
PRO
FLUORESCENT INDICATOR TUBE DRIVE (LEVEL METER) IC803
OSC IN
BUFFER AMP Q807
R IN
L IN
01-015
L OUT
R OUT
B+ SWITCH Q808, 809
FLUORESCENT INDICATOR TUBE DRIVE IC804
SIGNAL METER AMP Q801
FLUORESCENT INDICATOR TUBE DRIVE (SIGNAL INDICATOR) Q802-804
GRID DRIVE FOR LEVEL METER (L-CH) Q806 (R-CH) Q805
FLUORESCENT INDICATOR TUBE
CLOCK SLEEP TAPE COUNTER
AM PM MEMORY
PGM SIGNAL STEREO MUTING
AM FM kHz MHz
SUM MON TUE WED THU FRI SAT
TIMER 1 TIMER 2 TIMER 3
EVERY WEEK ON TIME OFF TIME
TIMER ON SKIP MUTE
PEAK PROGRAM METER
TAPE TYPE I II III IV AMS DOLBY NR
L -dB ∞ 40 25 15 10 6 4 2 0 2 4 6 7 8+dB R
TAPE PHONO AUX TUNER
7-SEGMENT ANODE SIGNAL
DIGIT SIGNAL
VD (FOR DISPLAY)
FLUORESCENT INDICATOR TUBE DRIVE (FREQUENCY DISPLAY) IC801
Vcc (FOR LOGIC CIRCUIT)
SIO/PIDP
RESET
DATA LOAD CLOCK ΦSIO OSC
FLUORESCENT INDICATOR TUBE DRIVE (CLOCK/TAPE COUNTER) DISPLAY IC802
DATA 0-3
LOAD 1
LOAD 2
DATA BUS CLOCK
AC
+24V
+5V
TO POWER SUPPLY SECTION POWER SUPPLY BOARD(1/2) CNJ71
8 Page 36

SECTION 2
DISASSEMBLY

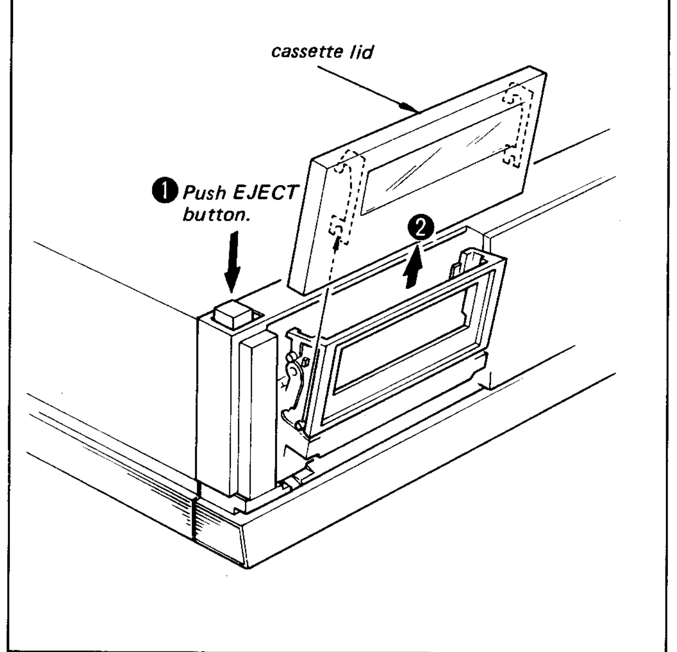
2-1. DISASSEMBLY AND INSTALLATION

Note: Follow the disassembly procedure in the numerical order given.

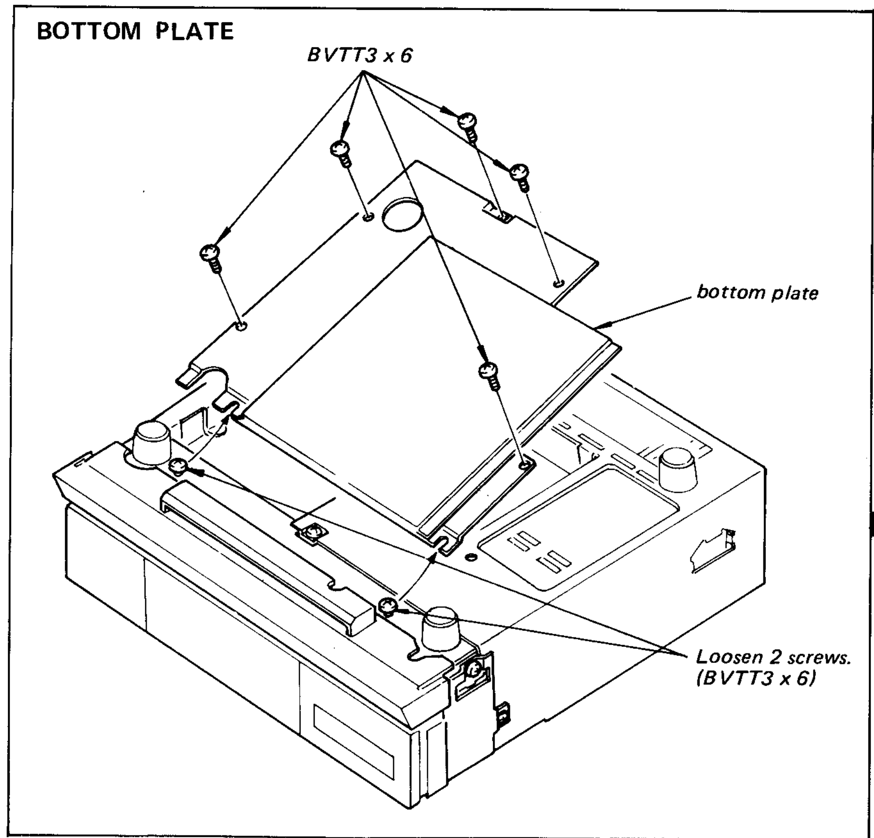
CASE


case
B4 x 8
case washer
case washer
B4 x 8

CASSETTE LID


cassette lid
❶ Push EJECT button.
❷

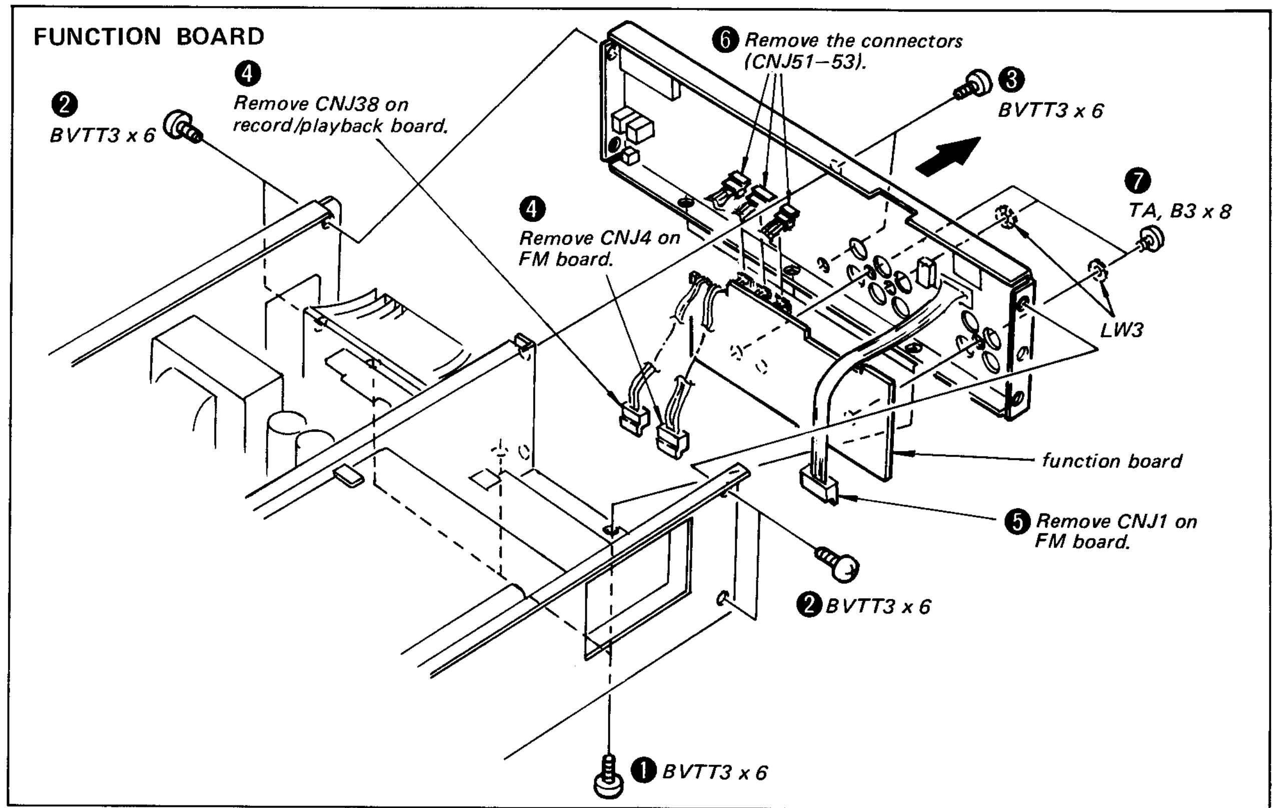
BOTTOM PLATE


BVTT3 x 6
bottom plate
Loosen 2 screws.
(BVTT3 x 6)

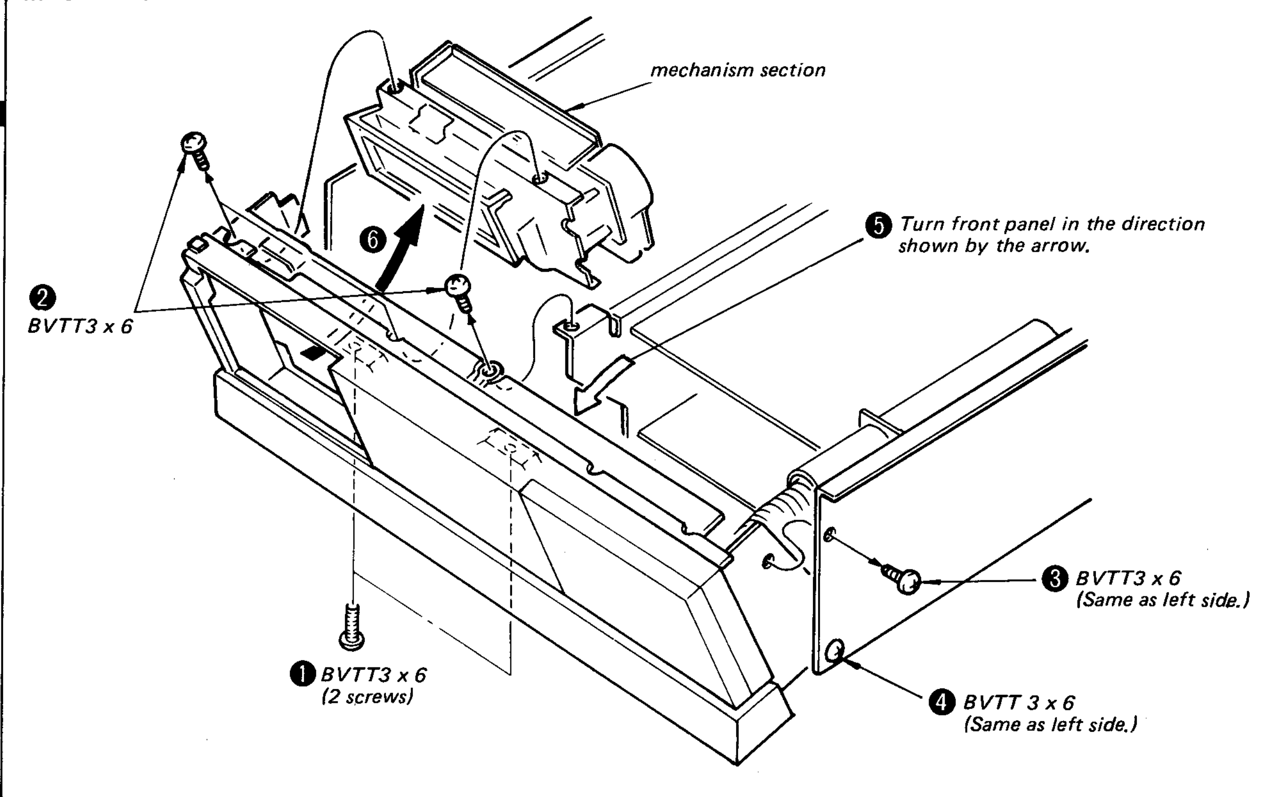
CASSETTE-ORNAMENT PLATE, PINCH ROLLER and REEL TABLE REMOVAL
(See page 47.)

The conductor side of microcomputer board, FM board and power supply board can be checked in this condition.

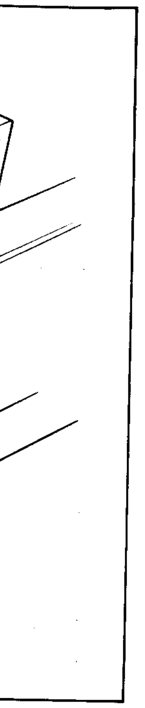
FUNCTION BOARD


❷ BVTT3 x 6
❹ Remove CNJ38 on record/playback board.
❻ Remove the connectors (CNJ51–53).
❸ BVTT3 x 6
❼ TA, B3 x 8
❹ Remove CNJ4 on FM board.
LW3
function board
❺ Remove CNJ1 on FM board.
❷ BVTT3 x 6
❶ BVTT3 x 6

MECHANISM SECTION


mechanism section
❺ Turn front panel in the direction shown by the arrow.
❻
❷ BVTT3 x 6
❸ BVTT3 x 6 (Same as left side.)
❹ BVTT 3 x 6 (Same as left side.)
❶ BVTT3 x 6 (2 screws)

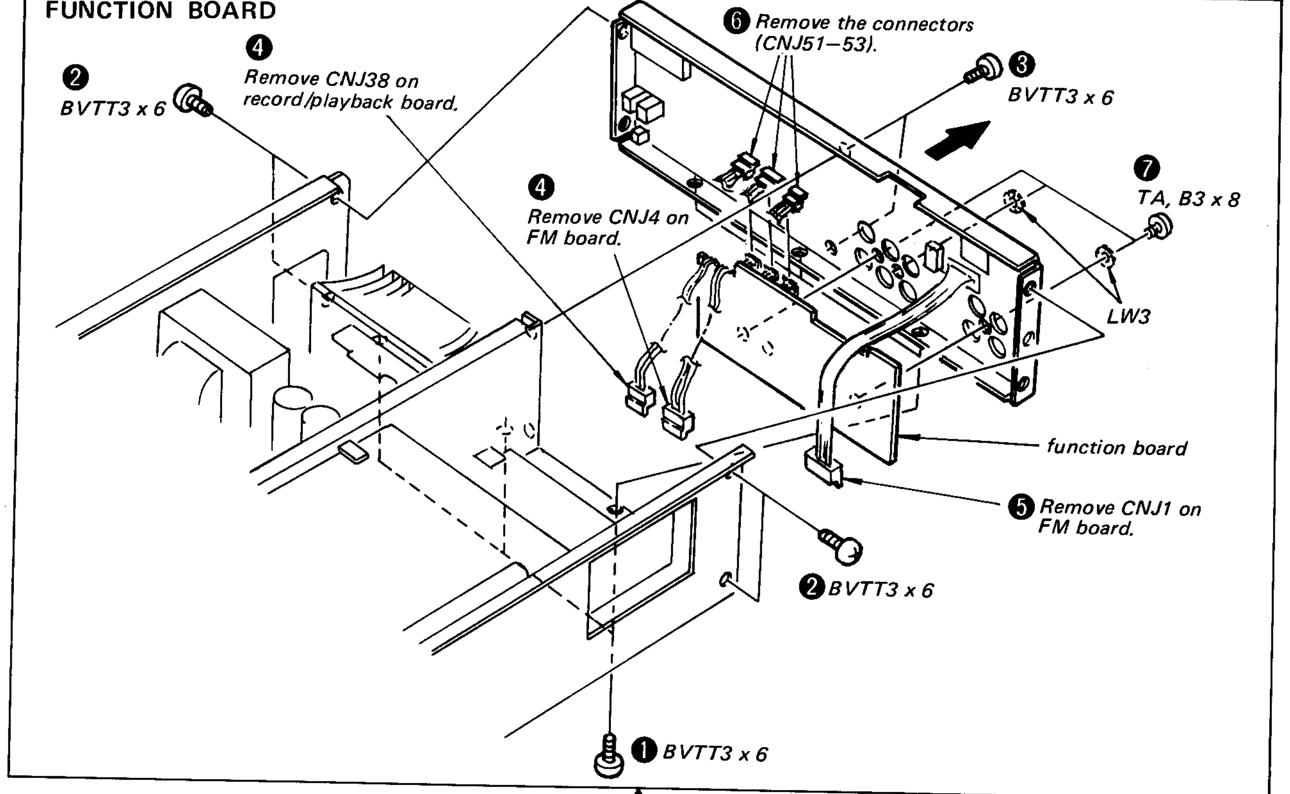
al order given.



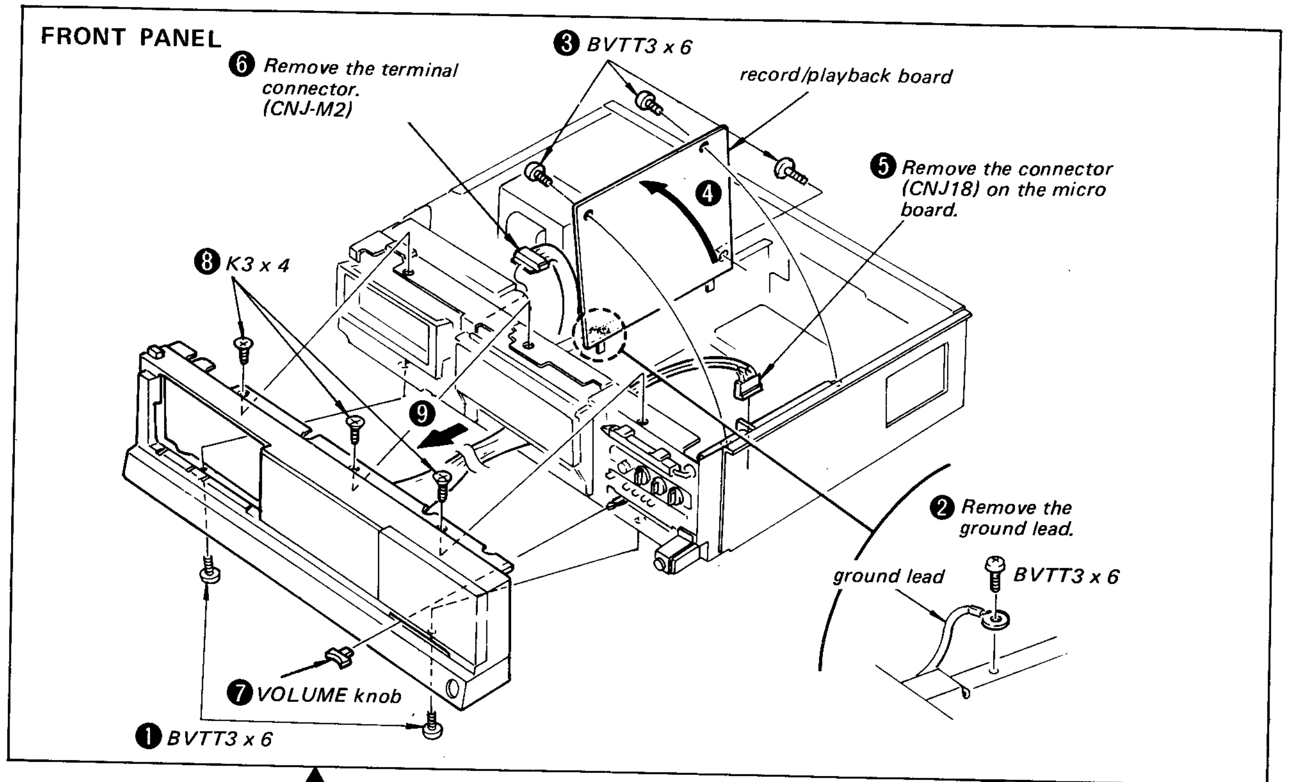
AMENT
ROLLER
LE RE-

side of
ard, FM
supply
cked in

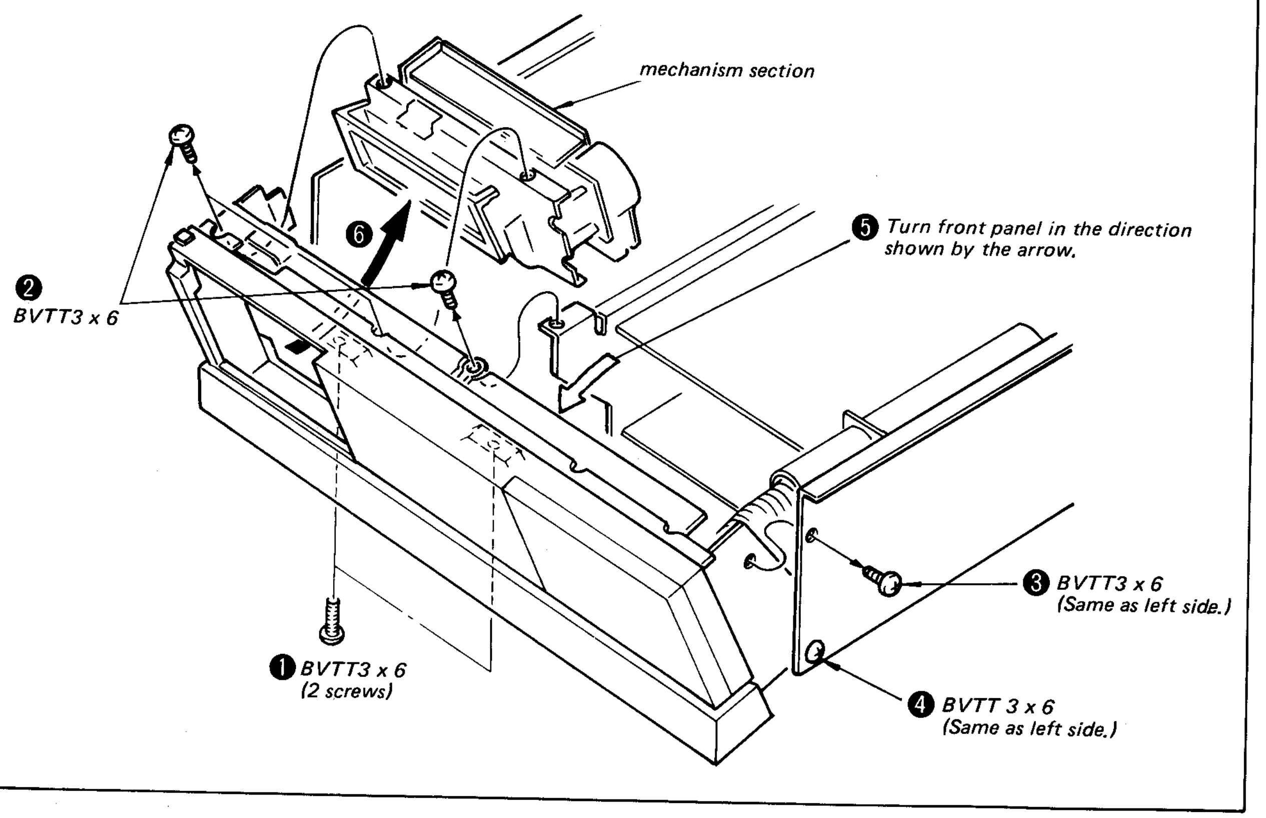
FUNCTION BOARD


❷ BVTT3 x 6
❹ Remove CNJ38 on record/playback board.
❻ Remove the connectors (CNJ51–53).
❸ BVTT3 x 6
❹ Remove CNJ4 on FM board.
❼ TA, B3 x 8
LW3
function board
❺ Remove CNJ1 on FM board.
❷ BVTT3 x 6
❶ BVTT3 x 6

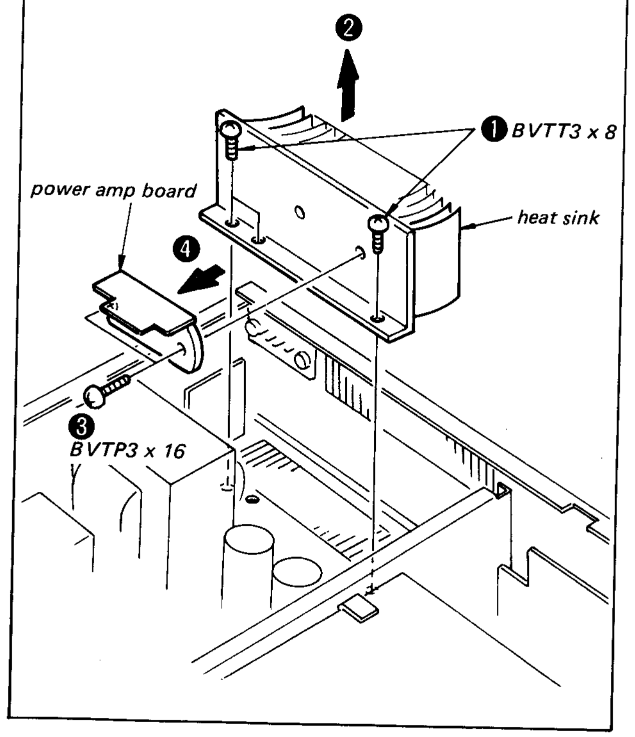
FRONT PANEL


❻ Remove the terminal connector. (CNJ-M2)
❸ BVTT3 x 6
record/playback board
❺ Remove the connector (CNJ18) on the micro board.
❹
❽ K3 x 4
❾
❷ Remove the ground lead.
ground lead
BVTT3 x 6
❼ VOLUME knob
❶ BVTT3 x 6

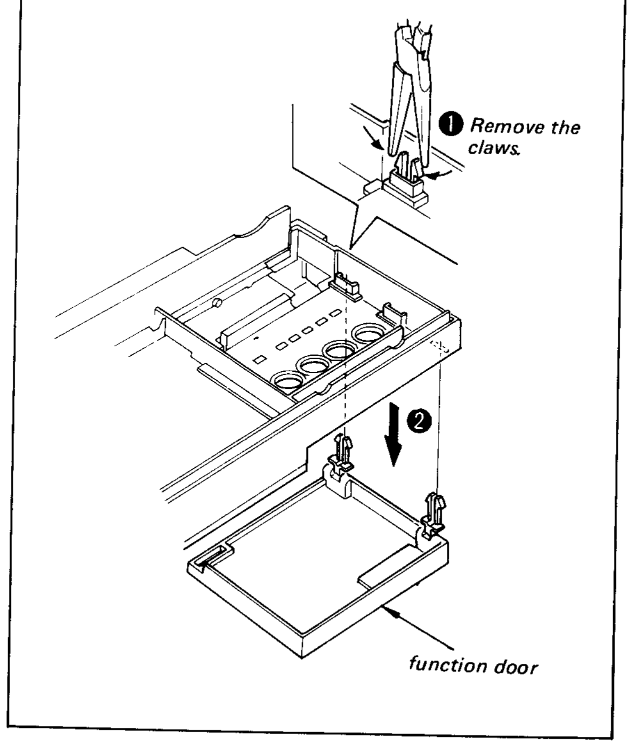
MECHANISM SECTION


mechanism section
❻
❺ Turn front panel in the direction shown by the arrow.
❷ BVTT3 x 6
❸ BVTT3 x 6 (Same as left side.)
❶ BVTT3 x 6 (2 screws)
❹ BVTT 3 x 6 (Same as left side.)

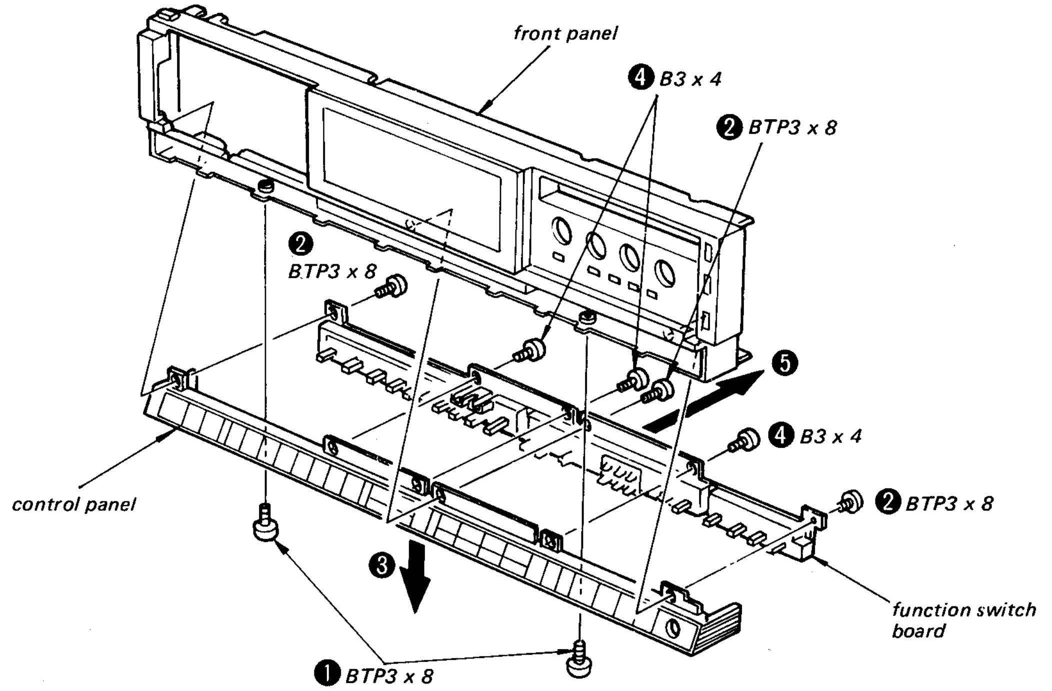
POWER AMP BOARD


❷
❶ BVTT3 x 8
power amp board
❹
heat sink
❸ BVTP3 x 16

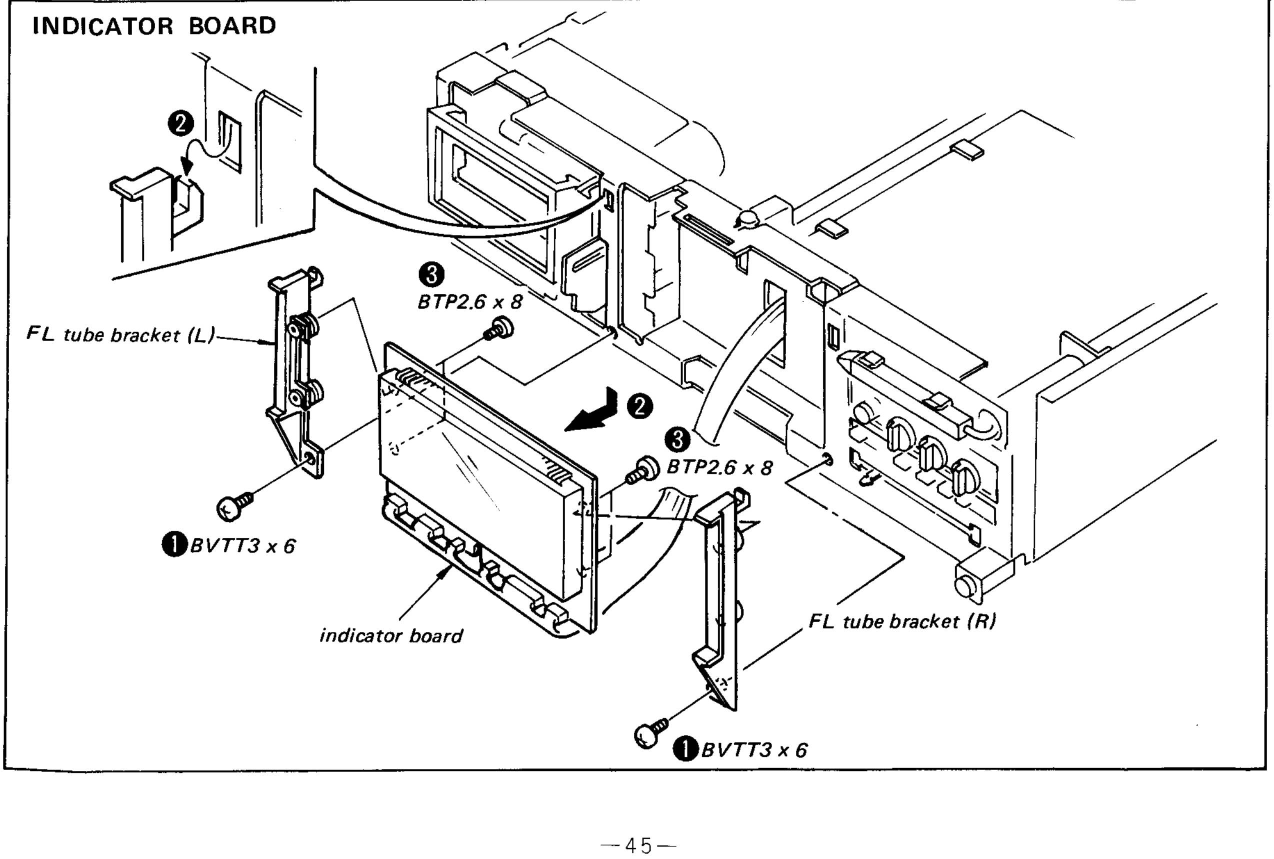
FUNCTION DOOR


❶ Remove the claws.
❷
function door

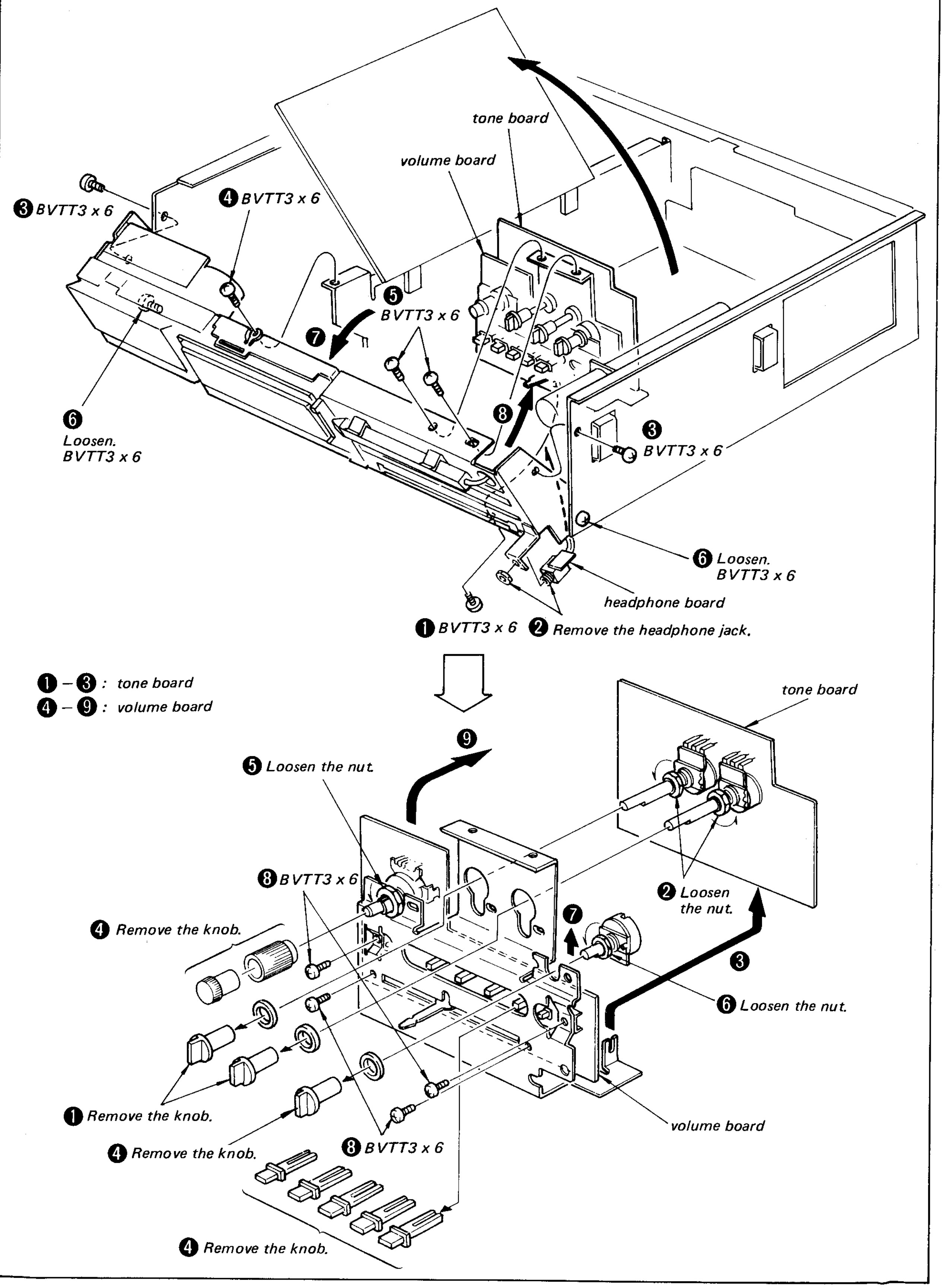
FUNCTION SWITCH BOARD


front panel
❹ B3 x 4
❷ BTP3 x 8
❷ BTP3 x 8
❺
❹ B3 x 4
❷ BTP3 x 8
control panel
❸
function switch board
❶ BTP3 x 8

INDICATOR BOARD


❷
❸ BTP2.6 x 8
FL tube bracket (L)
❷
❸ BTP2.6 x 8
❶ BVTT3 x 6
indicator board
FL tube bracket (R)
❶ BVTT3 x 6

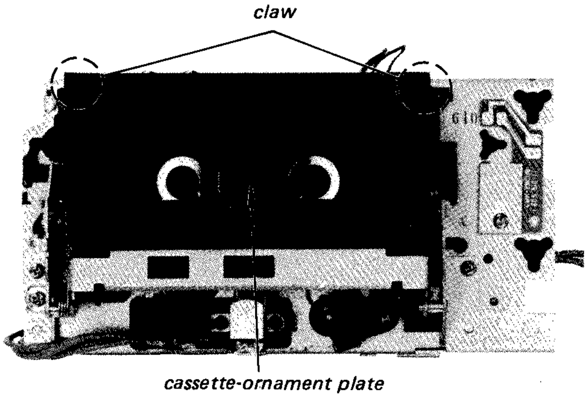
TONE BOARD, VOLUME BOARD


tone board
volume board
❸ BVTT3 x 6
❹ BVTT3 x 6
❺ BVTT3 x 6
❼
❻ Loosen. BVTT3 x 6
❽
❸ BVTT3 x 6
❻ Loosen. BVTT3 x 6
headphone board
❶ BVTT3 x 6
❷ Remove the headphone jack.
❶ – ❸ : tone board
❹ – ❾ : volume board
tone board
❾
❺ Loosen the nut.
❽ BVTT3 x 6
❹ Remove the knob.
❷ Loosen the nut.
❼
❸
❻ Loosen the nut.
❶ Remove the knob.
❹ Remove the knob.
❽ BVTT3 x 6
volume board
❹ Remove the knob.

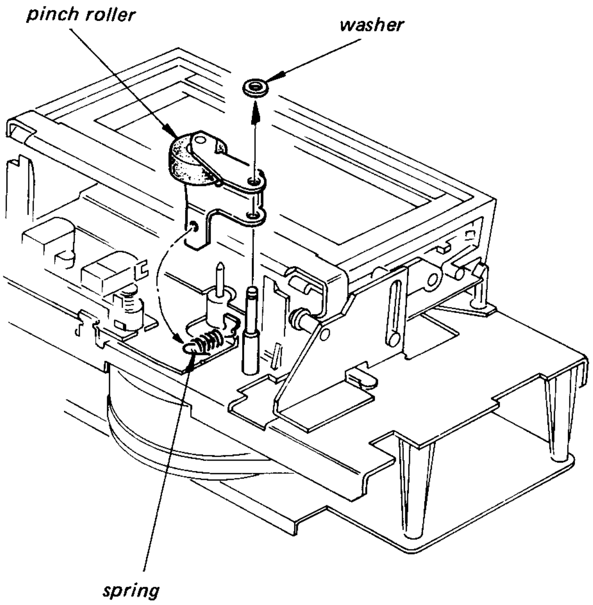
CASSETTE-ORNAMENT PLATE

Note: This plate does not need screws to be installed.

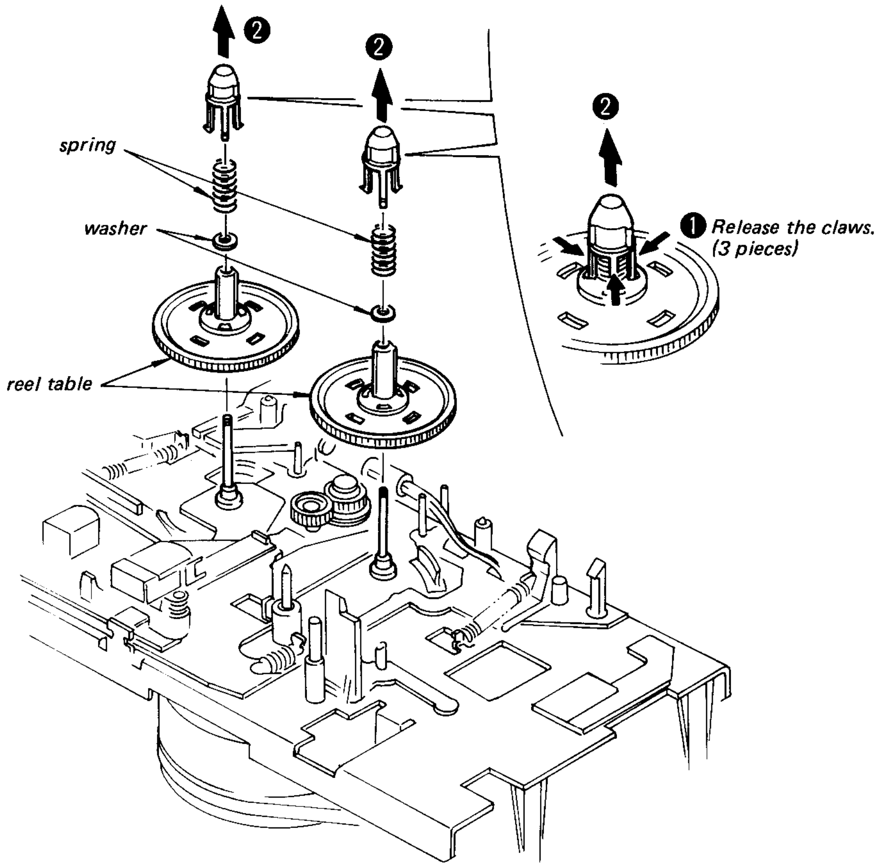
1. Press the ejection button and open the cassette lid.
2. Release the two claws from the cassette-ornament plate at both the top corners.
3. Depress the REC detecting lever and the half detecting levers at the inside of the set and remove the cassette-ornament plate.
4. When reinstalling the cassette-ornament plate, perform the steps in a reverse manner.


claw
cassette-ornament plate

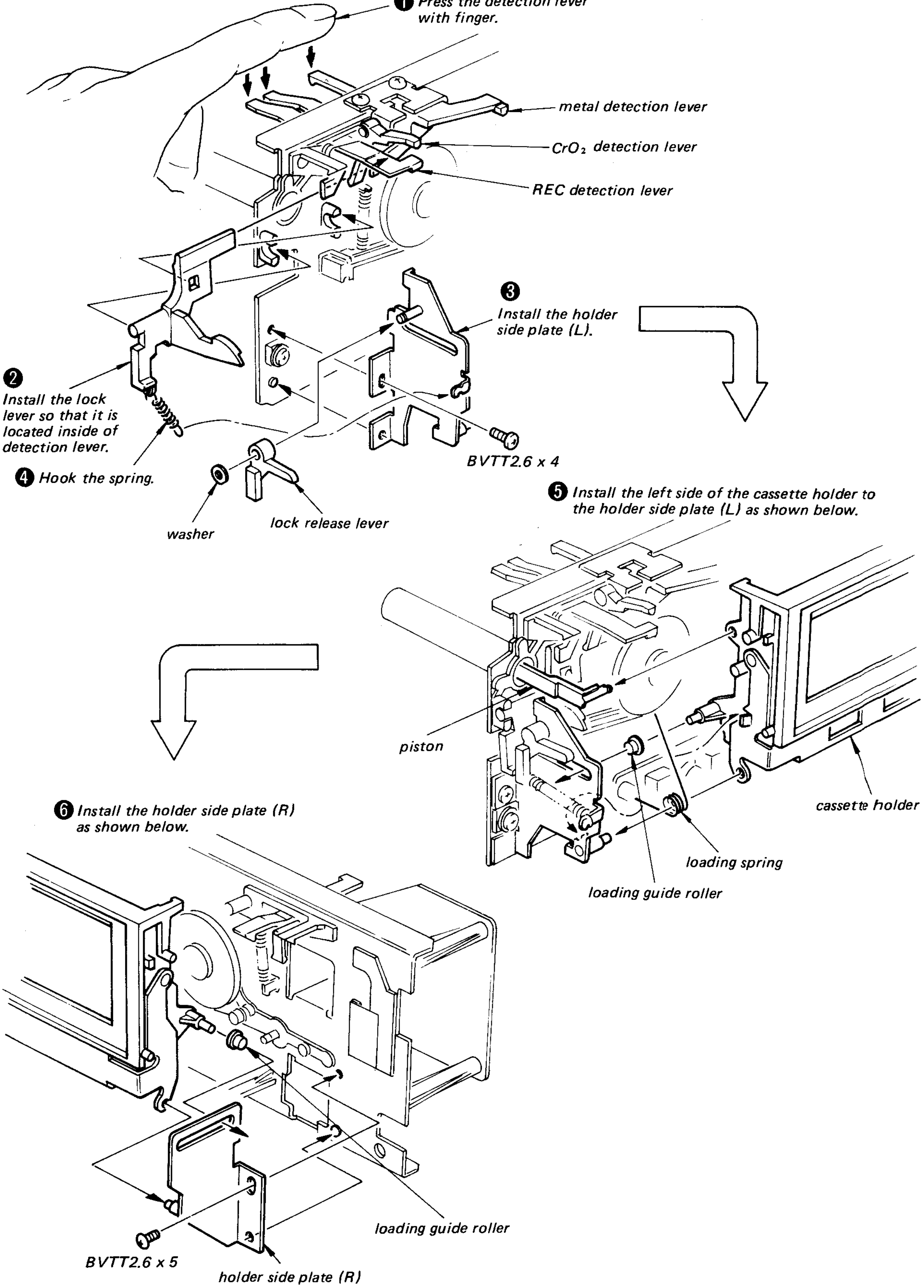
PINCH ROLLER


pinch roller
washer
spring

REEL TABLE


❷
❷
❷
spring
washer
reel table
❶ Release the claws. (3 pieces)

CASSETTE HOLDER INSTALLATION



❶ Press the detection lever with finger.

❷ Install the lock lever so that it is located inside of detection lever.

❸ Install the holder side plate (L).

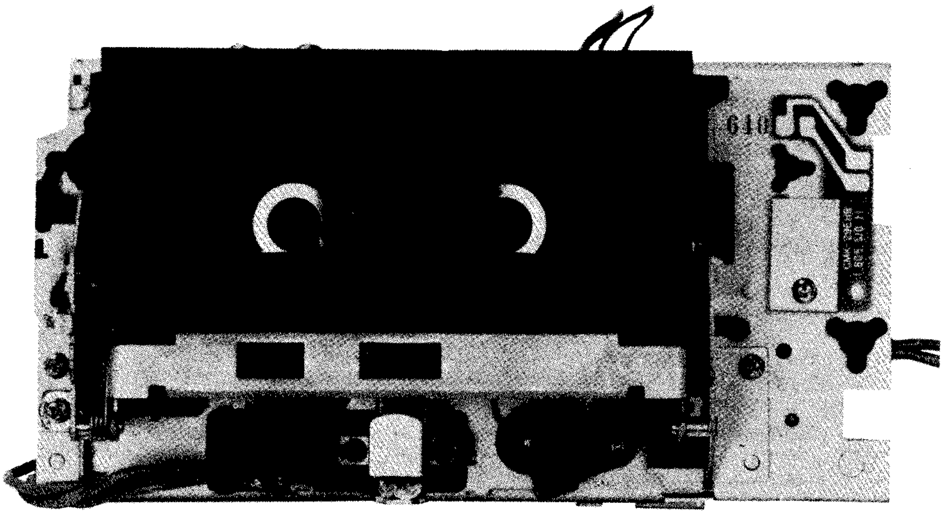
❹ Hook the spring.

❺ Install the left side of the cassette holder to the holder side plate (L) as shown below.

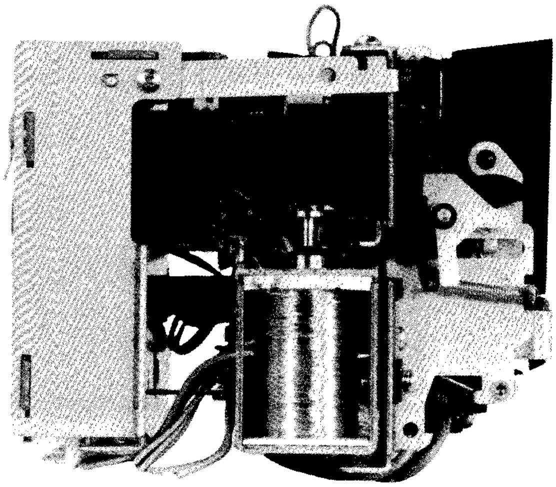
❻ Install the holder side plate (R) as shown below.

metal detection lever
CrO₂ detection lever
REC detection lever
BVTT2.6 x 4
washer
lock release lever
piston
cassette holder
loading spring
loading guide roller
loading guide roller
BVTT2.6 x 5
holder side plate (R)

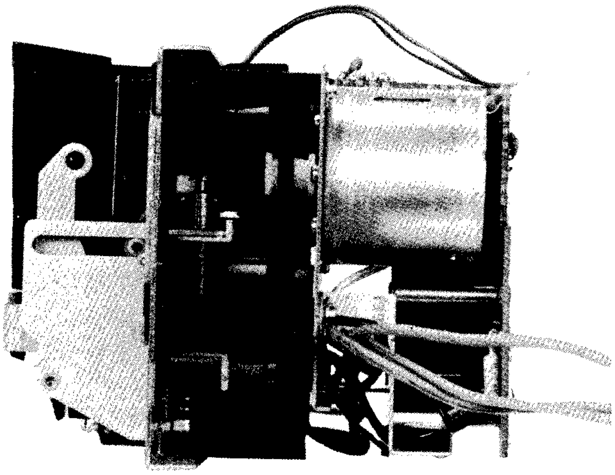
- **Front View**



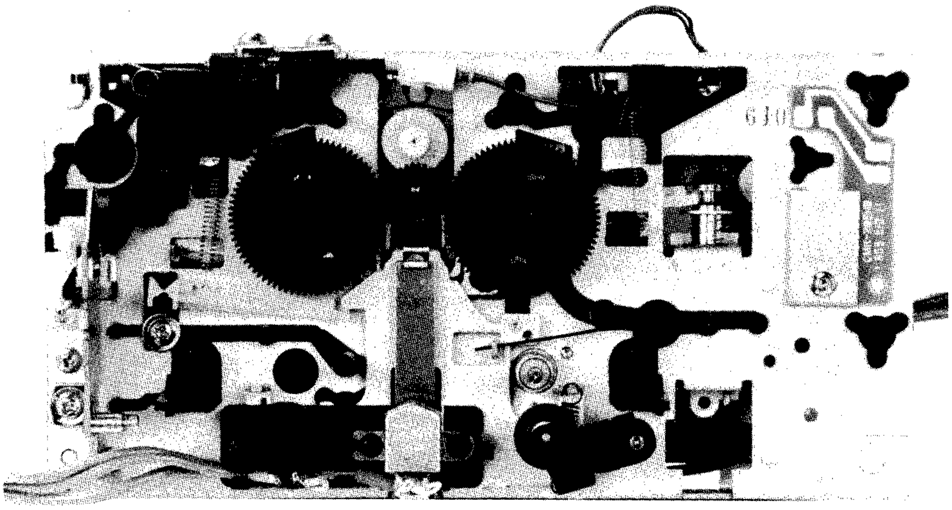
- **Left Side View**



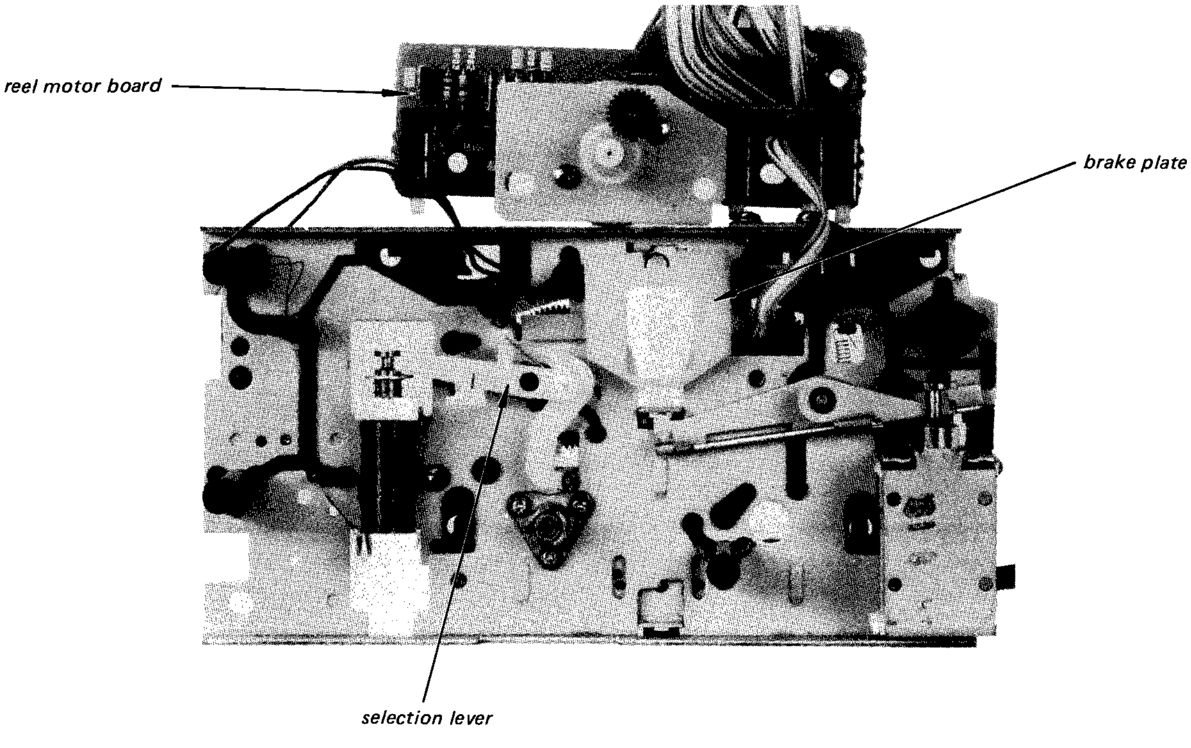
- **Right Side View**



- **Front View with Cassette Holder and Cassette-Ornament Plate Removed:**

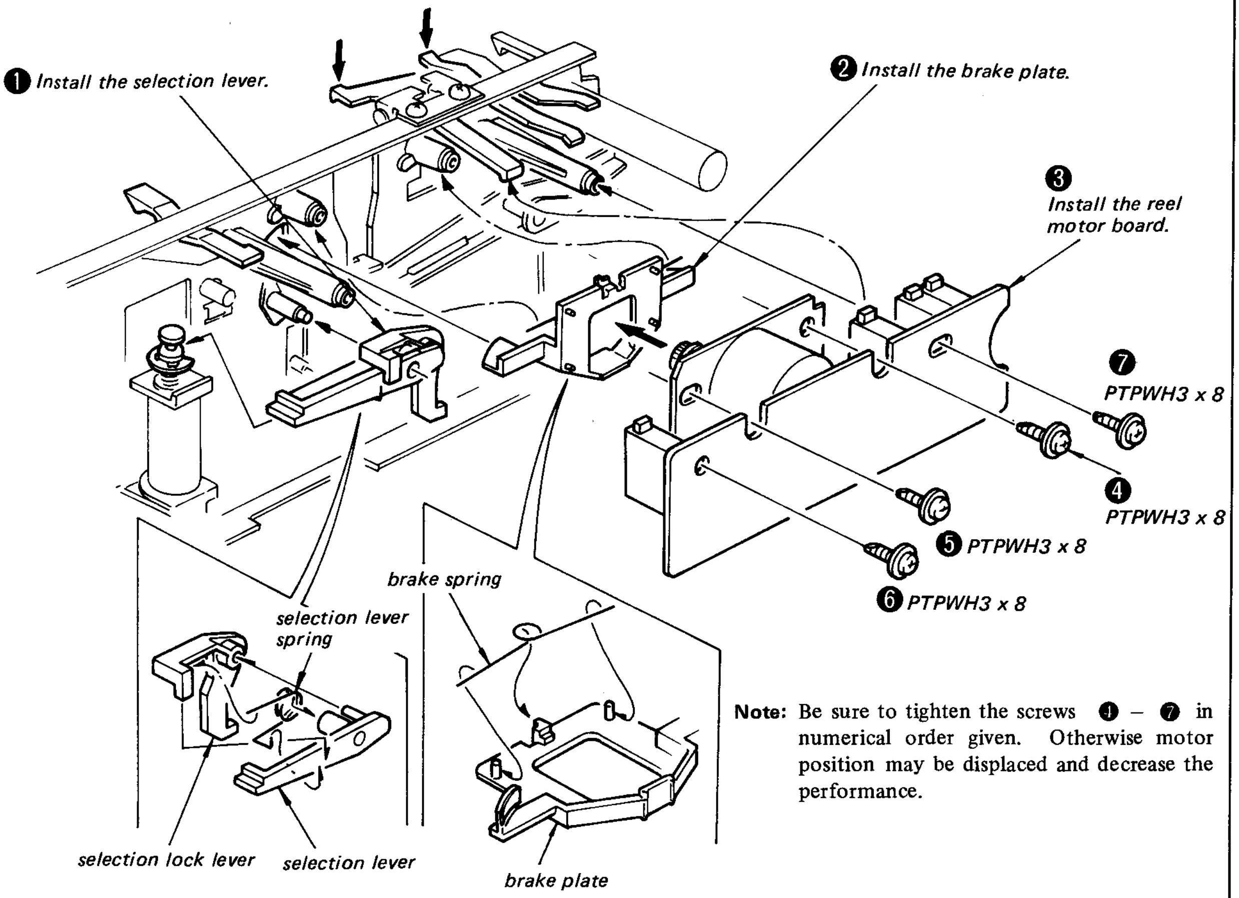


- **Bottom View with Reel Motor Board and Flywheel (T) Removed:**


reel motor board
brake plate
selection lever

REEL MOTOR BOARD INSTALLATION

- See the photo on page 50 (Bottom View).


❶ Install the selection lever.
❷ Install the brake plate.
❸ Install the reel motor board.
❼ PTPWH3 x 8
❹ PTPWH3 x 8
❺ PTPWH3 x 8
❻ PTPWH3 x 8
brake spring
selection lever spring
selection lock lever
selection lever
brake plate

Note: Be sure to tighten the screws ❹ – ❼ in numerical order given. Otherwise motor position may be displaced and decrease the performance.

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

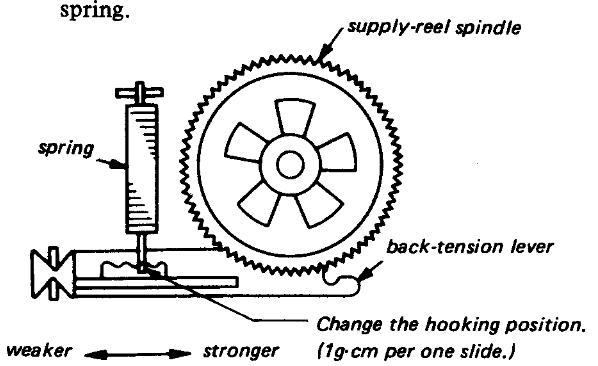
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement and Back Tension Torque Adjustment

1.

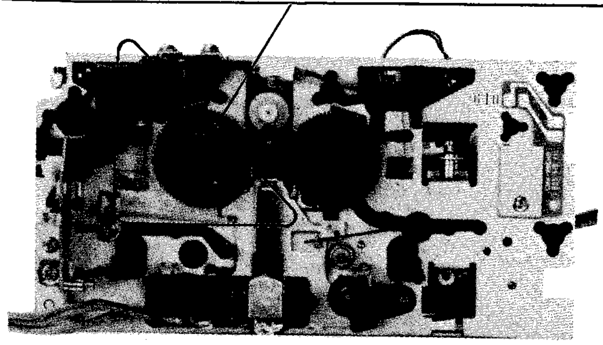
Torque	Torque meter	Meter reading
Forward	CQ-102C	30–60 g · cm (0.41–0.83 oz · inch)
Back tension	CQ-102C	2.5–4.5 g · cm (0.04–0.06 oz · inch)

2. If the specified back-tension torque is not obtained, change the hooking position of the spring.


supply-reel spindle
spring
back-tension lever
Change the hooking position.
(1g·cm per one slide.)
weaker
stronger

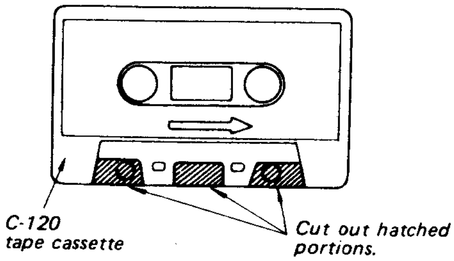
Confirmation:

Torque	Torque meter	Meter reading
FF REW	CQ201B	100–160 g · cm (1.38–2.22 oz · inch)



Head Height Adjustment

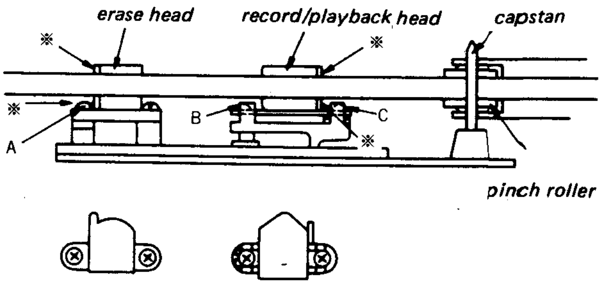
1. Prepare an adjustment cassette as shown below.

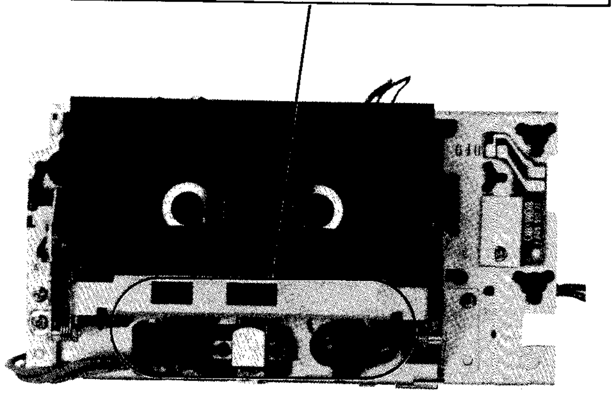

C-120
tape cassette
Cut out hatched portions.

2. In playback mode and viewing from the front, adjust the head heights by using the adjustment screw A, B, C, to eliminate tape curl and tape twist at portions shown by arrow (*).
3. a) Remove the tape curl at the erase head guides by turning the screw A.

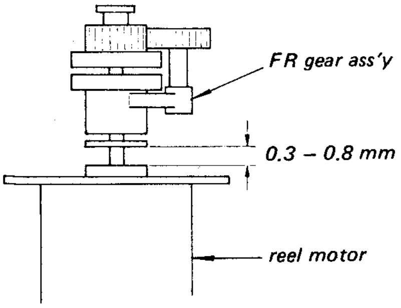
   b) Remove the tape curl at the record/playback head guides by turning the screws B and C by the same amount of angle in the same direction.

   c) After the adjustment, apply suitable locking compound to the screws.

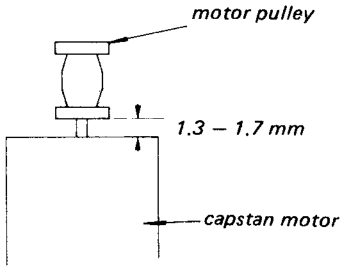

erase head
record/playback head
capstan
※
※
※
※
A
B
C
pinch roller

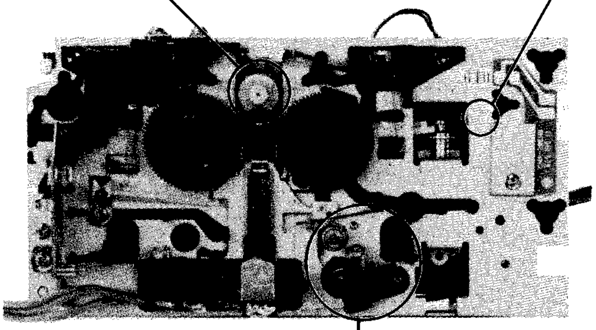


FR Gear Height Adjustment

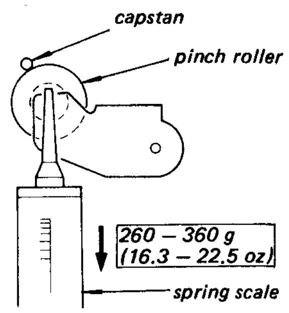

FR gear ass'y
0.3 – 0.8 mm
reel motor

Motor Pulley Height Adjustment


motor pulley
1.3 – 1.7 mm
capstan motor



Pinch Roller Pressure Adjustment


capstan
pinch roller
260 – 360 g
(16.3 – 22.5 oz)
spring scale

Procedure:

1. Clean the pinch roller and the capstan.
2. Set the unit to the forward mode. Measure the pinch roller pressure by using the spring scale. Read the spring scale just when the pinch roller stops rotating without contacting the capstan.

3-2. ELECTRICAL ADJUSTMENTS

Tape Recorder Section

Note: The adjustment should be performed in the order given in this service manual.
The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE SELECT switches according to the tape as follows.

Tape	TAPE SELECT switch
CS-15	AUTO (TYPE I: NORM)
CS-25	AUTO (TYPE II: CrO_2)
CS-30	TYPE III (Fe-Cr)
CS-40	TYPE IV (METAL)

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch . . . . OFF
TAPE SELECT switch . . . . AUTO
MEMORY switch . . . . OFF
REC MUTE switch . . . . OFF
Function selector keys . . . . CD/AUX

- **Standard Record:**

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	CD/AUX INPUT
source impedance	47 kΩ
input level	0.14 V (−15 dB)

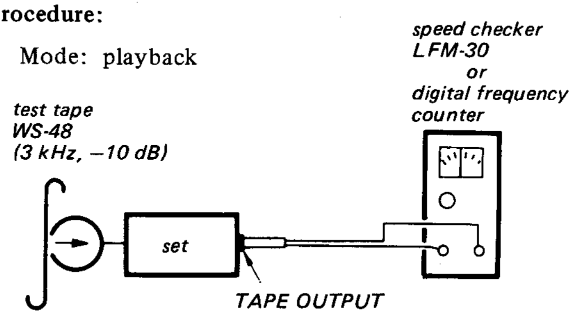
Standard Output Level

	TAPE OUTPUT
load impedance	4.7 kΩ
output level	0.44 V (−5 dB)

Capstan Motor Speed Adjustment

Procedure:

Mode: playback

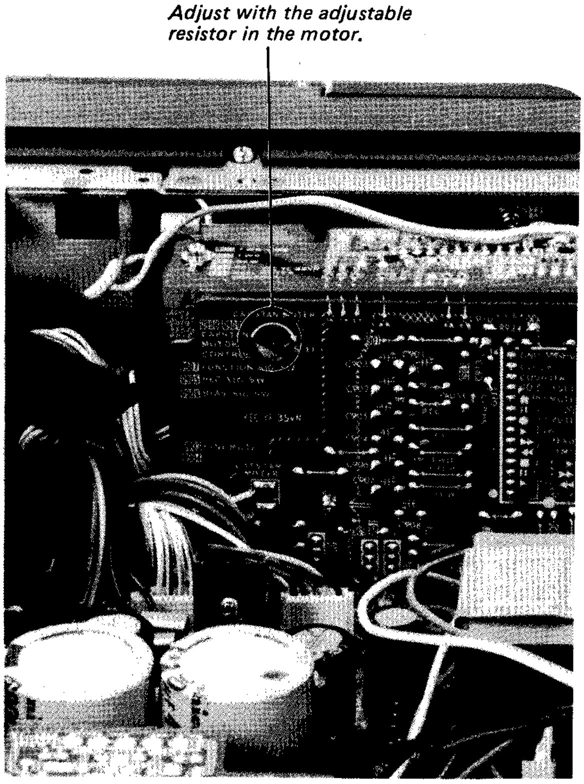

speed checker
LFM-30
or
digital frequency counter
test tape
WS-48
(3 kHz, −10 dB)
set
TAPE OUTPUT

Specification:

Speed checker	Digital frequency counter
−0.6 % to +0.6 %	2,980 to 3,020 Hz

Frequency difference between the beginning and the end of the tape should be within 0.34 % (10 Hz).

Adjustment Location:

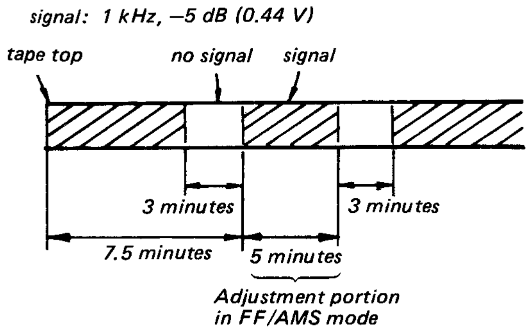

Adjust with the adjustable resistor in the motor.

AMP Speed Adjustment

Preparation:

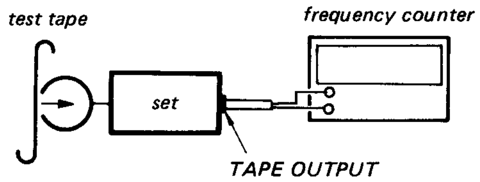
1. AMS speed adjustment tape

- Tape


signal: 1 kHz, –5 dB (0.44 V)
tape top
no signal
signal
3 minutes
3 minutes
7.5 minutes
5 minutes
Adjustment portion in FF/AMS mode

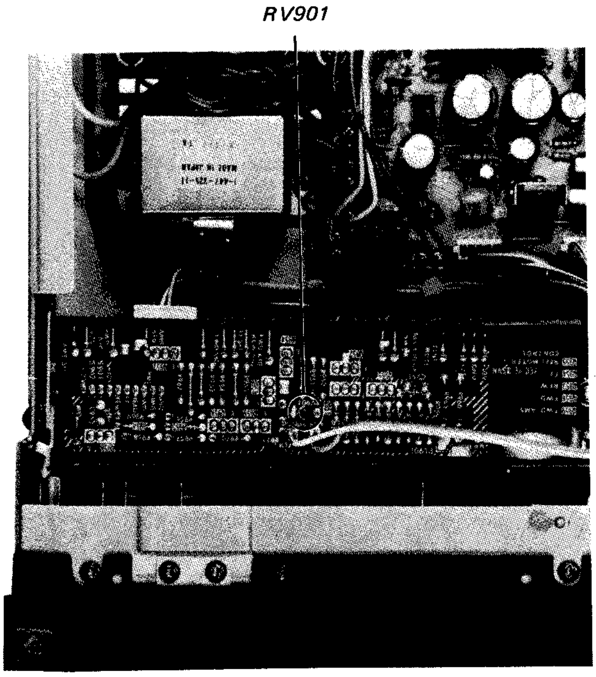
Procedure:

1. FF/AMS mode


test tape
frequency counter
set
TAPE OUTPUT

2. Adjust RV901 so that the reading on the frequency counter becomes 23 kHz ±1 kHz at the 5 minutes portion of the adjustment tape.

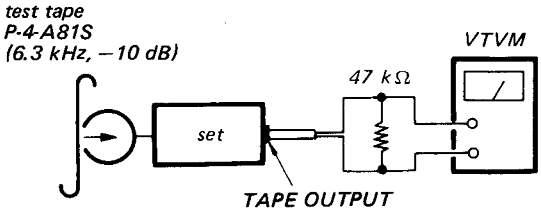
Adjustment Location: system control (A) board



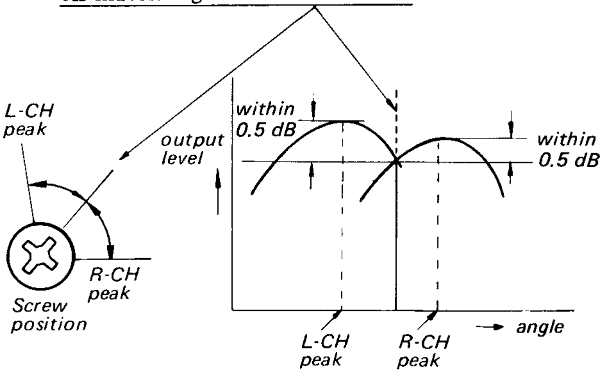
Record/playback Head Azimuth Adjustment

Procedure:

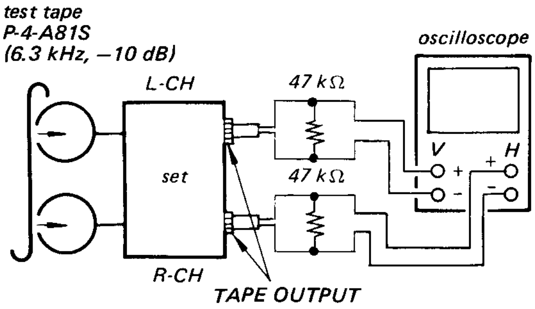
1. Mode: playback

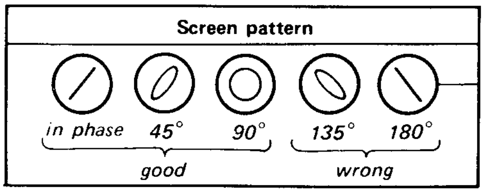

test tape
P-4-A81S
(6.3 kHz, –10 dB)
VTVM
47 kΩ
set
TAPE OUTPUT

2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.

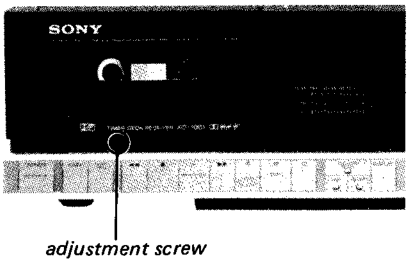

L-CH peak
output level
within 0.5 dB
within 0.5 dB
R-CH peak
Screw position
L-CH peak
R-CH peak
angle

3. Phase Check
   Mode: playback


test tape
P-4-A81S
(6.3 kHz, –10 dB)
oscilloscope
L-CH
47 kΩ
V
H
set
47 kΩ
R-CH
TAPE OUTPUT


Screen pattern
in phase
45°
90°
135°
180°
good
wrong

Adjustment Location:

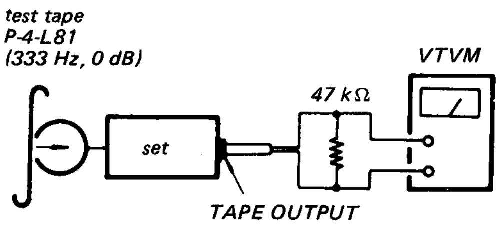


adjustment screw

Playback Level Adjustment

Procedure:

Mode: playback


test tape
P-4-L81
(333 Hz, 0 dB)
VTVM
47 kΩ
set
TAPE OUTPUT

Specification:

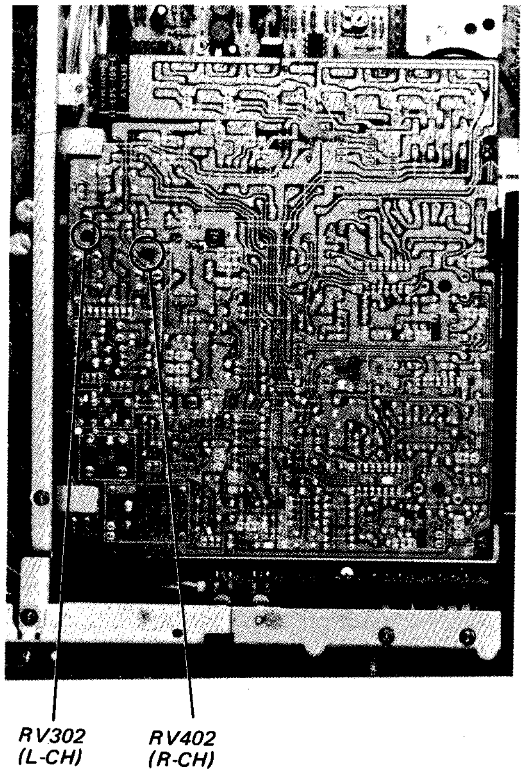
TAPE OUTPUT level: 0.52 to 0.58 V
(−3.5 to −2.5 dB)

Level difference between channels:
less than 0.5 dB

Check that the TAPE OUTPUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

– record/playback board –


RV302
(L-CH)
RV402
(R-CH)

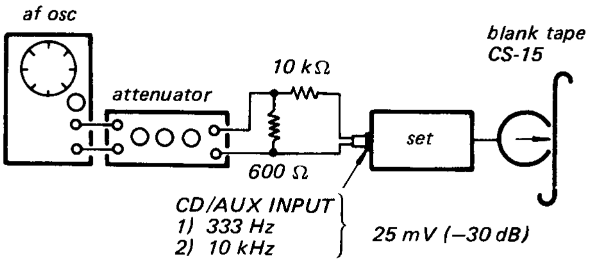
Record Bias Adjustment

Setting:

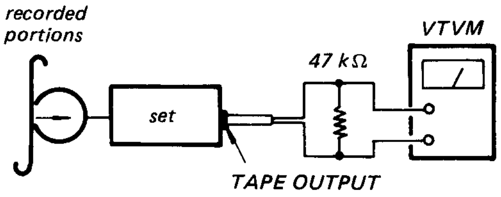
REC LEVEL control: standard record
(See page 54.)

Procedure:

1. Mode: record


af osc
attenuator
10 kΩ
600 Ω
blank tape
CS-15
set
CD/AUX INPUT
1) 333 Hz
2) 10 kHz
25 mV (−30 dB)

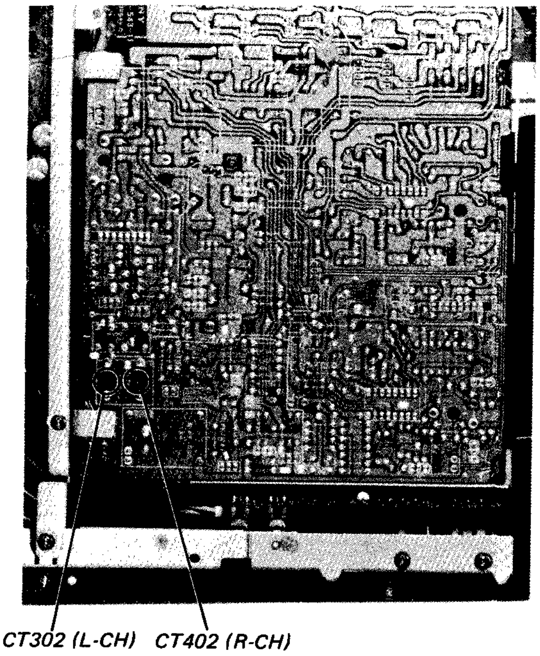
2. Mode: playback


recorded
portions
VTVM
47 kΩ
set
TAPE OUTPUT

Adjust CT302 (L-CH), CT402 (R-CH) so that the TAPE OUTPUT level of 10 kHz signal is 0 dB relative to that of 333 Hz.

Adjustment Location:

– record/playback board –


CT302 (L-CH)
CT402 (R-CH)

Record Level Adjustment

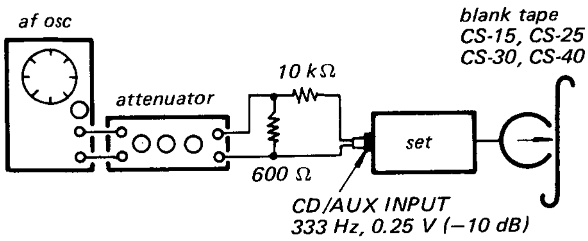
Setting:

REC LEVEL control: standard record (See page 54.)

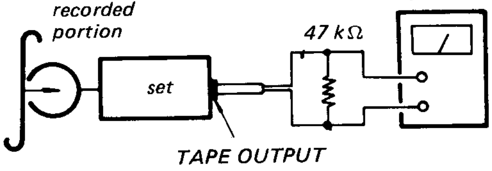
TAPE SELECT switch: See page 54.

Procedure:

1. Mode: record


af osc
attenuator
10 kΩ
600 Ω
set
blank tape
CS-15, CS-25
CS-30, CS-40
CD/AUX INPUT
333 Hz, 0.25 V (−10 dB)

2. Mode: playback


recorded portion
set
47 kΩ
VTVM
TAPE OUTPUT

Specification:

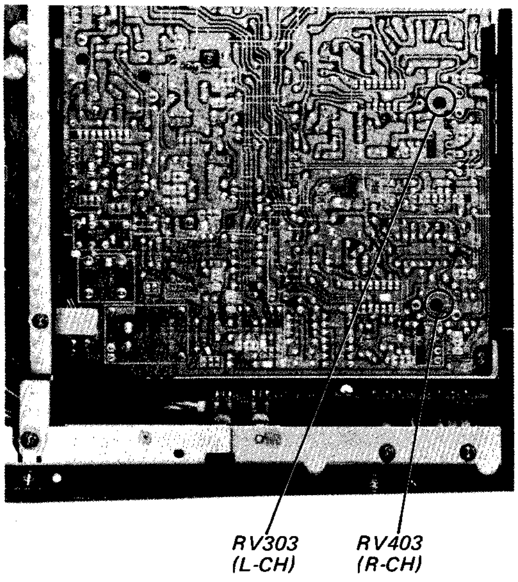
TAPE OUTPUT level:

CS-15 . . . . . 0.41 to 0.46 V (−5.5 to −4.5 dB)

CS-25, 30, 40 . . . . . 0.37 to 0.51 V (−6.5 to −3.5 dB)

Adjustment Location:

– record/playback board –


RV303 (L-CH)
RV403 (R-CH)

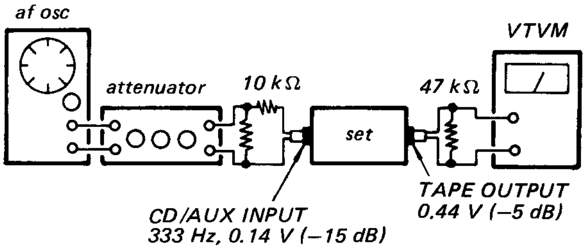
Level Meter Calibration

Setting:

REC LEVEL control: standard record (See page 54.)

Procedure:

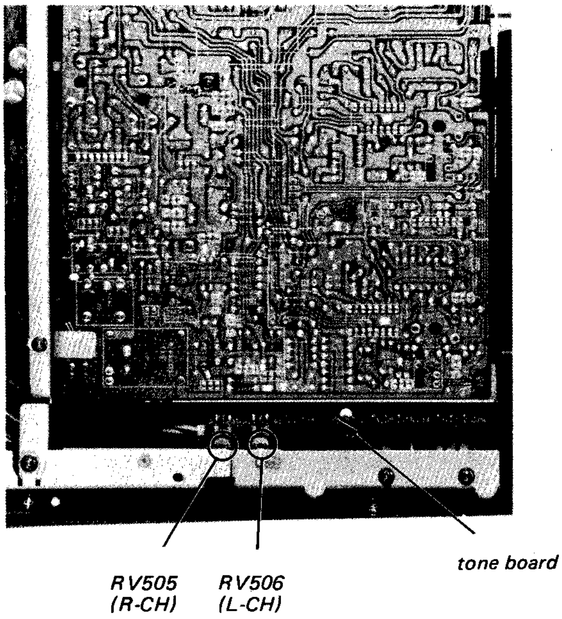
1. Mode: record


af osc
attenuator
10 kΩ
set
47 kΩ
VTVM
CD/AUX INPUT
333 Hz, 0.14 V (−15 dB)
TAPE OUTPUT
0.44 V (−5 dB)

2. Adjust RV506 (L-CH), RV606 (R-CH) so that LED meter indicates −4 dB (0 VU) sliding the REC LEVEL control rightward slowly. (Be careful to peakhold indication.)

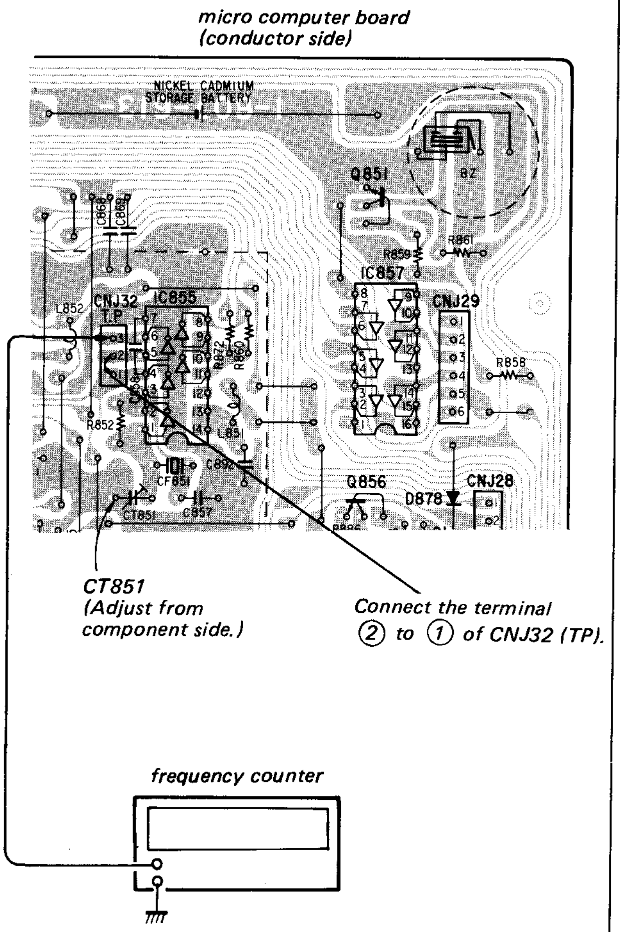
Adjustment Location:

–tone board –


RV505 (R-CH)
RV506 (L-CH)
tone board

Timer Section

TIME f_0 Adjustment



micro computer board (conductor side)

NICKEL CADMIUM STORAGE BATTERY
Q851
BZ
C868
C869
R859
R861
IC857
CNJ29
R858
L852
CNJ32
T.P
IC855
R872
R860
R852
L851
C892
CF851
CT851
C857
Q856
D878
CNJ28

CT851 (Adjust from component side.)

Connect the terminal ② to ① of CNJ32 (TP).

frequency counter

1. Adjust CT851 so that the frequency counter reading becomes 4.194300 MHz ±20 Hz.
2. After adjustment, disconnect the terminal ② from ① of CNJ32 (TP).

Tuner Section

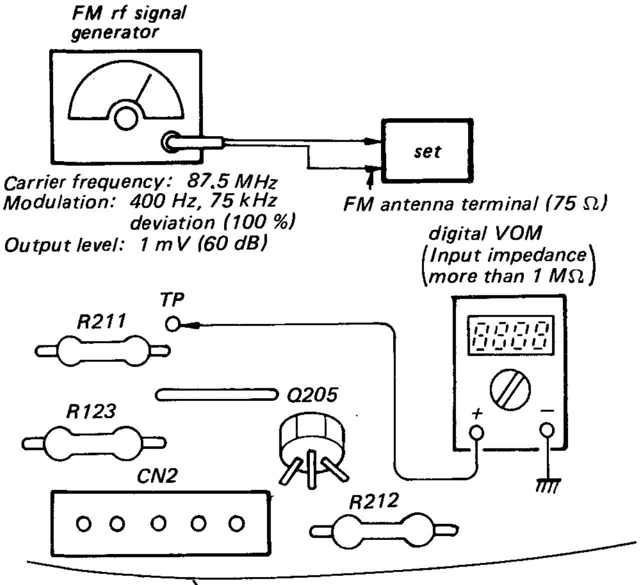
- **FM Section**

PLL Integrated Circuit Voltage Adjustment

Setting:

FM/AM band selector key . . . . FM
STEREO/MUTING switch . . . . OFF

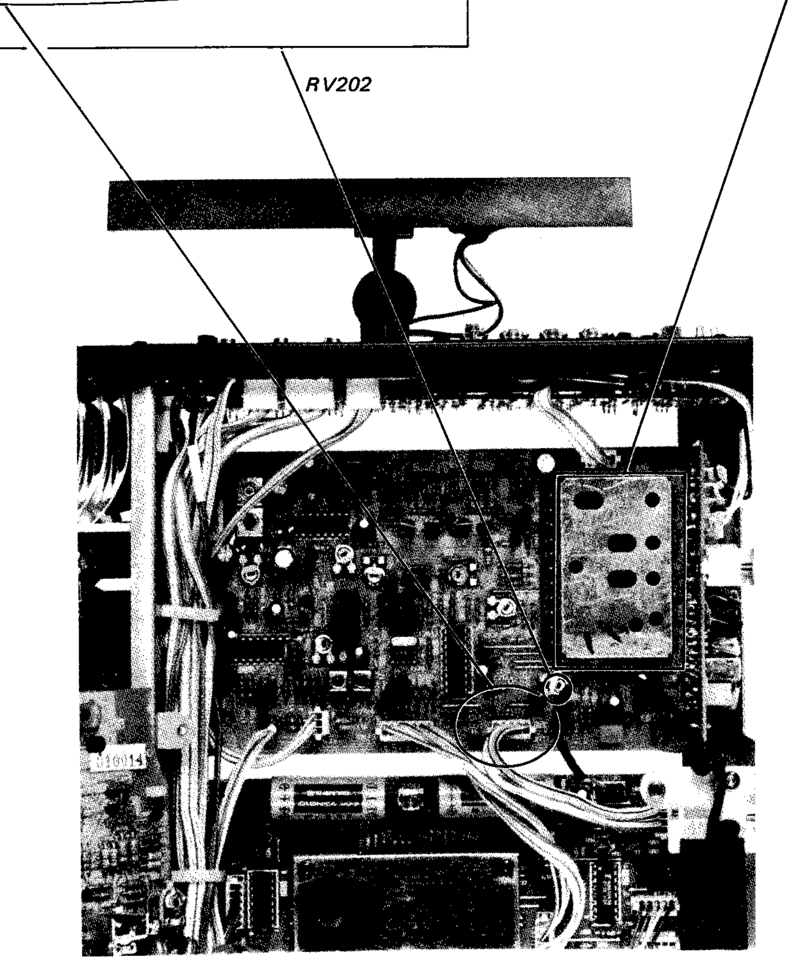
Procedure:


FM rf signal generator
set
Carrier frequency: 87.5 MHz
Modulation: 400 Hz, 75 kHz deviation (100 %)
Output level: 1 mV (60 dB)
FM antenna terminal (75 Ω)
digital VOM (Input impedance more than 1 MΩ)
TP
R211
Q205
R123
CN2
R212
+
–

1. Terminate 75 Ω input of FM antenna terminal with 75 Ω dummy resistor.
2. Tune the set to 87.5 MHz on FM frequency indication by pressing TUNING key (±).
3. Adjust RV202 for 1.8 V on digital VOM reading.
4. Disconnect 75 Ω dummy resistor connected on step 1 and receive the signal from FM rf signal generator.
5. Press TUNING key (±) to slide the frequency ±0.3 – 0.5 MHz. Confirm that the signal can be received.
   (One pressing the key changes 0.05 MHz.)

Servicing Precaution

The front-end section has been carefully adjusted at the factory. When it is worn out, be sure to exchange it all with new section, because it is difficult to repair.

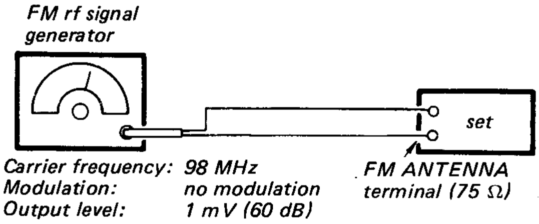


19 kHz VCO Adjustment

Setting:

FM/AM band selector key. . . . . . FM
STEREO/MUTING switch . . . . . ON (STEREO)

A) Regular Method

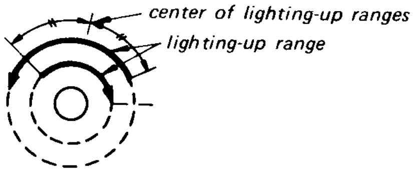

FM rf signal generator
set
Carrier frequency: 98 MHz
Modulation: no modulation
Output level: 1 mV (60 dB)
FM ANTENNA terminal (75 Ω)

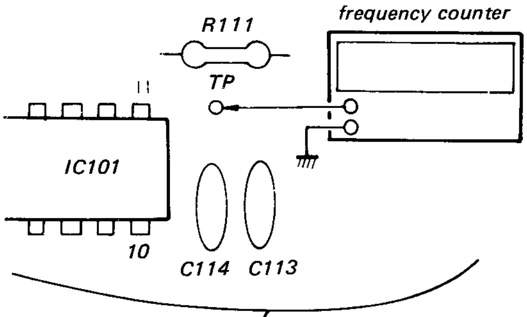
1. Tune the set to 98 MHz by pressing the TUNING key (±).
2. Adjust RV101 so that the reading on the frequency counter becomes 19 kHz ±50 Hz.
   Use the frequency counter with more than 220 kΩ input impedance.

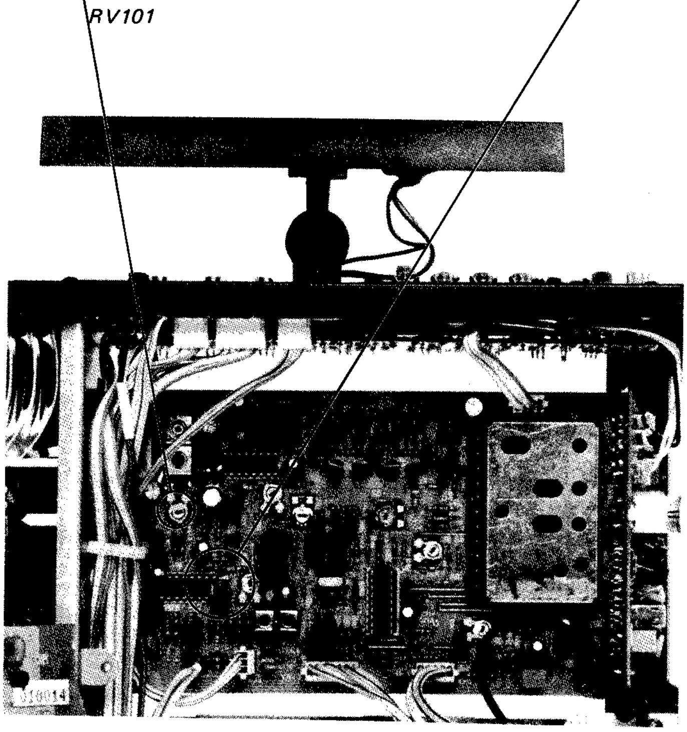
B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV101 clockwise or counterclockwise and memorize the lighting-up range of the stereo lamp.
3. Secure RV101 at the center of the lighting-up renge of both turns as shown below.


center of lighting-up ranges
lighting-up range


R111
frequency counter
TP
11
IC101
10
C114
C113

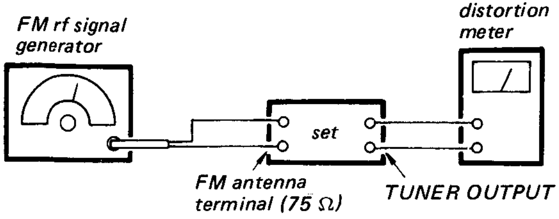


FM Discriminator Adjustment

Setting:

FM/AM band selector key. . . . . . FM
STEREO/MUTING switch . . . . . OFF

Procedure:

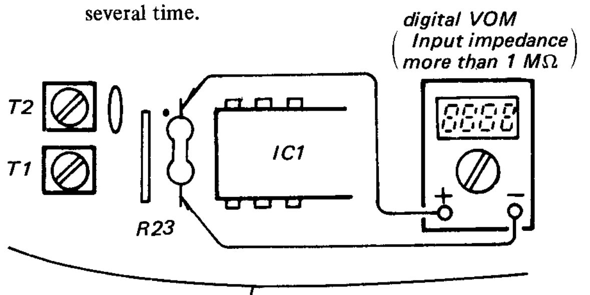

FM rf signal generator
distortion meter
set
FM antenna terminal (75 Ω)
TUNER OUTPUT

Carrier frequency: *98 MHz*
Output level: *1 mV (60 dB)*
Modulation: *400 Hz, 75 kHz deviation*
(100 %)

1. Tune the set to 98 MHz by pressing the TUNING key (±).
2. Adjust T1 (black core) for 0 V reading on the digital VOM. . . . . NULL Adjustment

   Note: When the ceramic filter is replaced, these adjustments should be made.
3. Adjust T2 (white core) for a minimum reading on the distortion meter. . . . . Distortion Adjustment

   Note: Repeat the NULL and Distortion Adjustments several time.

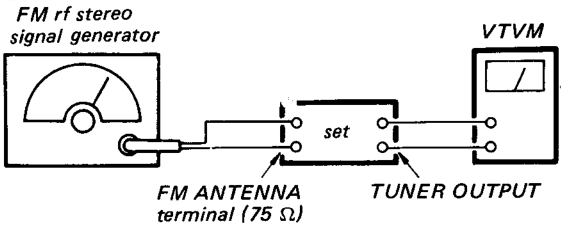

digital VOM
(Input impedance more than 1 MΩ)
T2
T1
IC1
R23
+
−

FM Stereo Separation Adjustment

Setting:

FM/AM band selector key . . . . . FM
STEREO/MUTING switch . . . . . ON (STEREO)

Procedure:

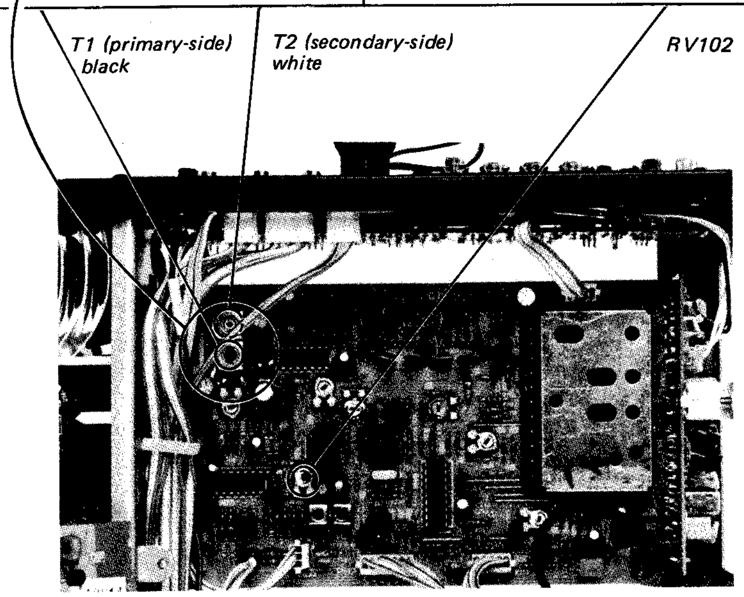

FM rf stereo signal generator
VTVM
set
FM ANTENNA terminal (75 Ω)
TUNER OUTPUT

Carrier frequency: *98 MHz*
Output level: *1 mV (60 dB)*
Mode: *Stereo*
Modulation:
Audio (1 kHz): *33.75 kHz deviation (45 %)*
Pilot (19 kHz): *7.5 kHz deviation (10 %)*
Subchannel (38 kHz): *33.75 kHz deviation (45 %)*

FM stereo signal generator output channel	**VTVM connection**	**VTVM reading (dB)**
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV102 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV102 for minimum reading.

L-CH Stereo separation: Ⓐ − Ⓑ
R-CH Stereo separation: Ⓒ − Ⓓ

The separations of both channels should be equal.

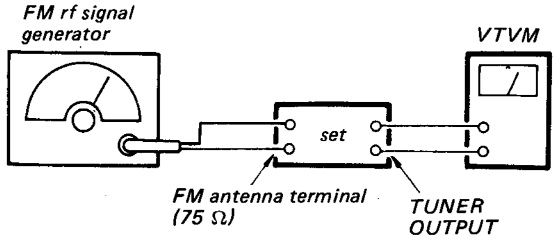

T1 (primary-side) black
T2 (secondary-side) white
RV102

FM Muting Level Adjustment

Setting:

FM/AM band selector key . . . . FM
STEREO/MUTING switch . . . . ON

Procedure:

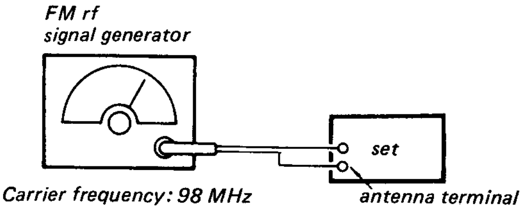

FM rf signal generator
VTVM
set
FM antenna terminal (75 Ω)
TUNER OUTPUT

Carrier frequency: 98 MHz
Modulation: 400 Hz, 75 kHz deviation (100 %)
Output level: 18 μV (25 dB)

1. Tune the set to 98 MHz by pressing TUNING key (+, –).
2. Turn RV1 and stop it just when the VTVM indication suddenly decreases.

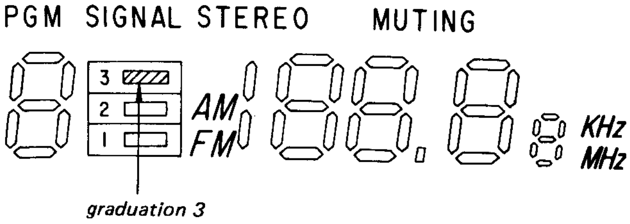
FM Signal Indicator Adjustment

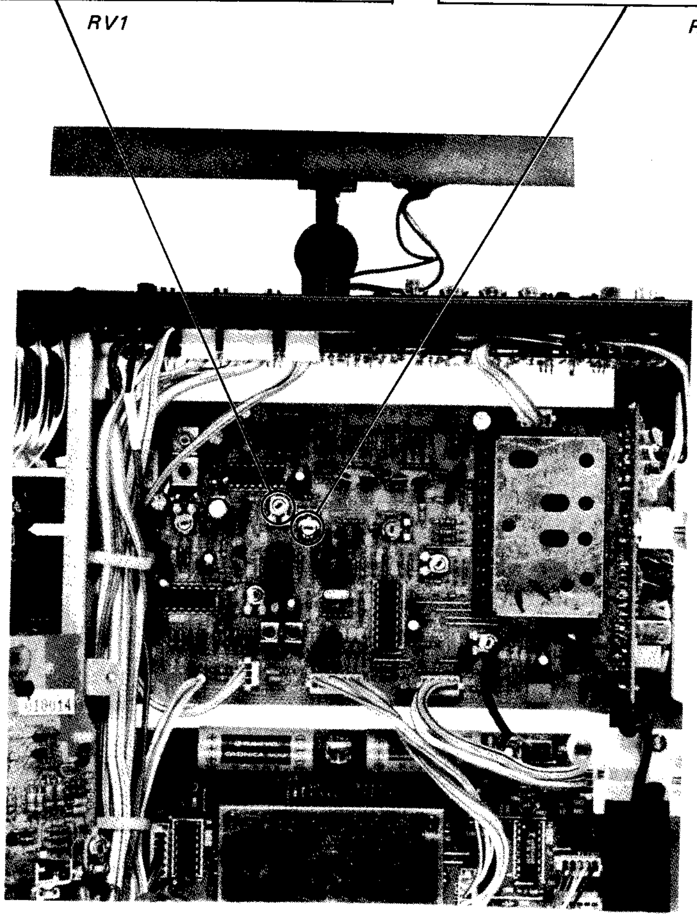
Procedure:


FM rf signal generator
set
antenna terminal (75 Ω)

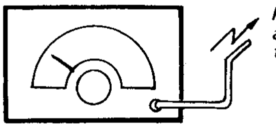
Carrier frequency: 98 MHz
Output level: 562 μV (55 dB)
Modulation: 400 Hz, 100 % modulation

Turn RV2 and stop it when the graduation 3 changes from turning off to on.


PGM SIGNAL STEREO MUTING
3
2
1
AM
FM
KHz
MHz
graduation 3

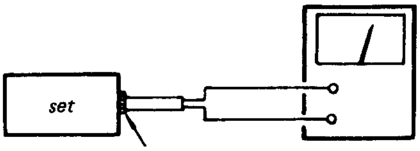


- **AM Section**


AM rf signal generator

Put the lead-wire antenna close to the set.

30% amplitude modulation by 400 Hz signal



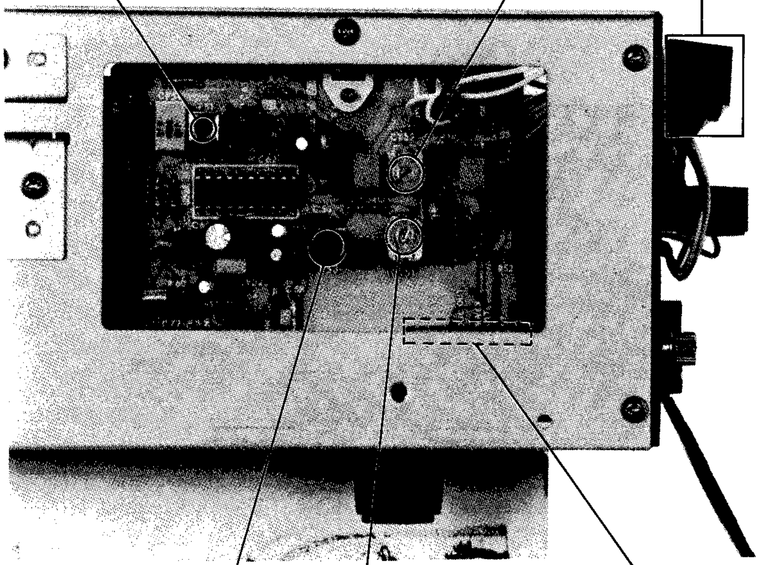
tester (0.5 – 5 V AC range)

TUNER OUTPUT

- Repeat the procedures in each adjustment several times, and the MW VCO and tracking adjustments should be finally done by the trimmer capacitors.

AM ALIGNMENT	
Adjust for a maximum reading on VOM ①.	
IFT51	450 kHz

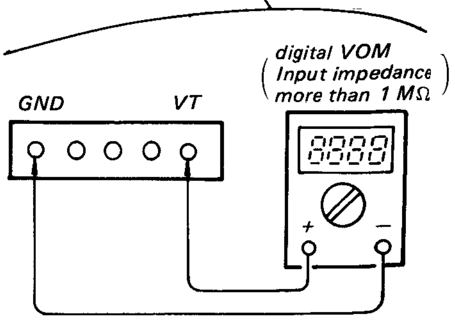
AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM ①.	
1,404 kHz	603 kHz
CT52	L52



MW VCO Adjustment

1. STEREO/MUTE switch (S601-5): OFF
2. Adjust L53 (CT51) so that the reading on the digital VOM is as follows when the set is tuned to 522 (1,602) kHz by pressing TUNING key (±).

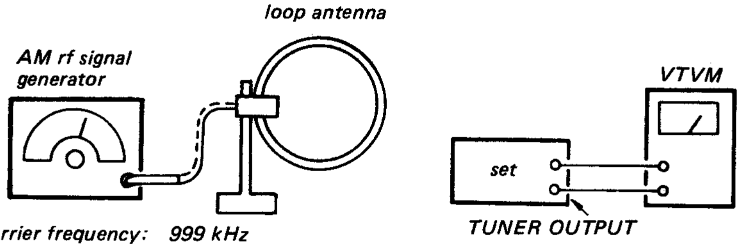
MW VCO		
frequency indication	522 kHz	1,602 kHz
reading on digital VOM	1.6 V	24 V
adjustment location	L53	CT51



digital VOM (Input impedance more than 1 MΩ)

AM Muting Level Adjustment

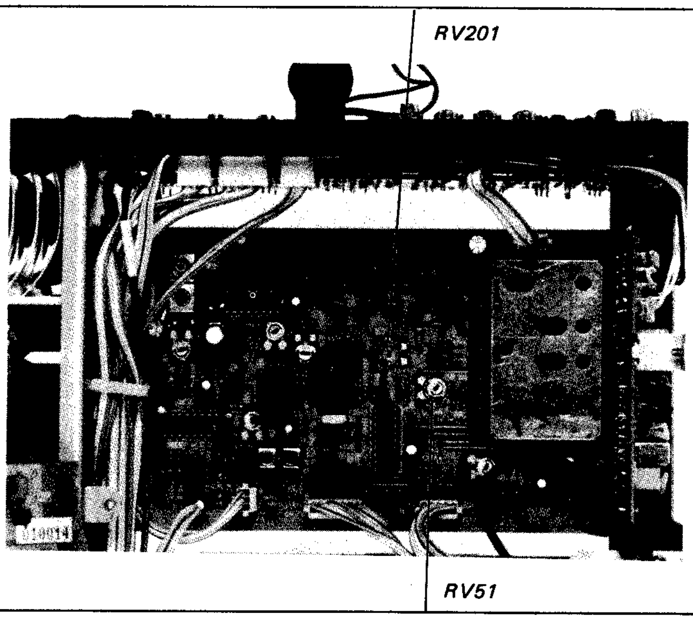
Connection:


loop antenna
AM rf signal generator
VTVM
set
TUNER OUTPUT

Carrier frequency: 999 kHz
Modulation: 400 Hz, 30 % modulation

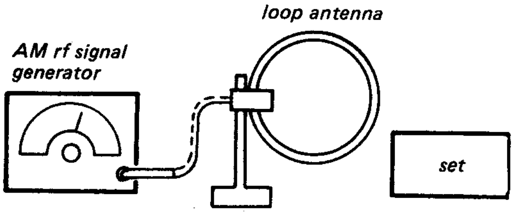
Procedure:

1. Set AM rf signal generator so that the AM antenna input level becomes 63 dB/m.
2. STEREO/MUTING switch (S601-4): ON
3. Turn RV201 and stop it just when the reading on VTVM suddenly becomes 0 V.

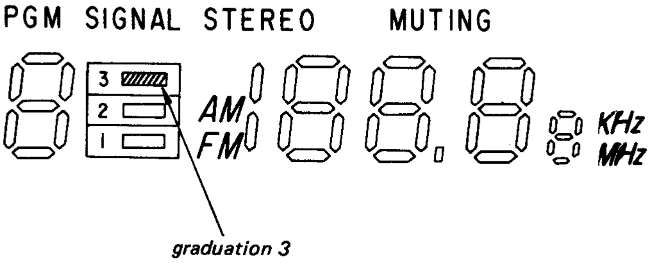


AM Signal Indicator Adjustment

Connection:


loop antenna
AM rf signal generator
set

Carrier frequency: 999 kHz
Modulation: 400 Hz, 30 % modulation

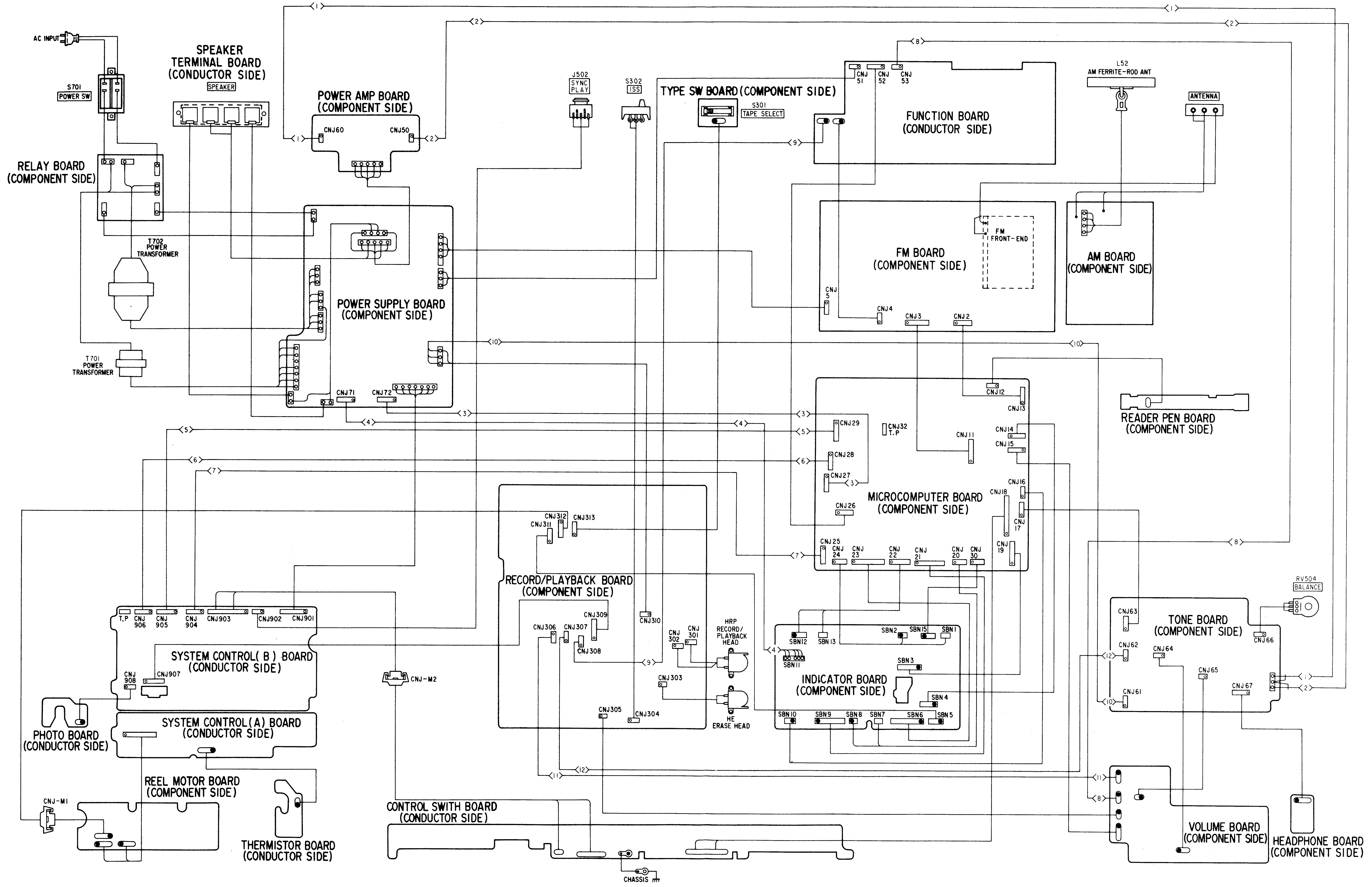

PGM SIGNAL STEREO MUTING
3
2
1
AM
FM
KHz
MHz
graduation 3

Procedure:

1. Set AM rf signal generator so that the AM antenna input level becomes 70 dB/m.
2. Turn RV51 and stop it when the graduation 3 changes from turning off to on.

SECTION 4
DIAGRAMS

4-1. TOTAL WIRING DIAGRAMS


AC INPUT
S701
POWER SW
SPEAKER TERMINAL BOARD (CONDUCTOR SIDE)
SPEAKER
POWER AMP BOARD (COMPONENT SIDE)
CNJ60
CNJ50
J502
SYNC PLAY
S302
ISS
TYPE SW BOARD (COMPONENT SIDE)
S301
TAPE SELECT
CNJ 51
CNJ 52
CNJ 53
FUNCTION BOARD (CONDUCTOR SIDE)
L52
AM FERRITE-ROD ANT
ANTENNA
RELAY BOARD (COMPONENT SIDE)
T702
POWER TRANSFORMER
POWER SUPPLY BOARD (COMPONENT SIDE)
T701
POWER TRANSFORMER
CNJ71
CNJ72
FM BOARD (COMPONENT SIDE)
FM FRONT-END
CNJ 5
CNJ4
CNJ3
CNJ2
AM BOARD (COMPONENT SIDE)
READER PEN BOARD (COMPONENT SIDE)
MICROCOMPUTER BOARD (COMPONENT SIDE)
CNJ29
CNJ32 T.P
CNJ11
CNJ12
CNJ13
CNJ14
CNJ15
CNJ16
CNJ17
CNJ18
CNJ19
CNJ28
CNJ27
CNJ26
CNJ25
CNJ 24
CNJ 23
CNJ 22
CNJ 21
CNJ 20
CNJ 30
RECORD/PLAYBACK BOARD (COMPONENT SIDE)
CNJ311
CNJ312
CNJ313
CNJ306
CNJ307
CNJ308
CNJ309
CNJ310
CNJ 302
CNJ 301
CNJ303
CNJ304
CNJ305
HRP RECORD/PLAYBACK HEAD
HE ERASE HEAD
INDICATOR BOARD (COMPONENT SIDE)
SBN12
SBN13
SBN2
SBN15
SBN1
SBN11
SBN3
SBN4
SBN10
SBN9
SBN8
SBN7
SBN6
SBN5
TONE BOARD (COMPONENT SIDE)
RV504
BALANCE
CNJ63
CNJ62
CNJ64
CNJ65
CNJ66
CNJ67
CNJ61
T.P
CNJ 906
CNJ 905
CNJ 904
CNJ903
CNJ902
CNJ901
SYSTEM CONTROL(B) BOARD (CONDUCTOR SIDE)
CNJ 908
CNJ907
CNJ-M2
PHOTO BOARD (CONDUCTOR SIDE)
SYSTEM CONTROL(A) BOARD (CONDUCTOR SIDE)
REEL MOTOR BOARD (COMPONENT SIDE)
THERMISTOR BOARD (CONDUCTOR SIDE)
CNJ-M1
CONTROL SWITH BOARD (CONDUCTOR SIDE)
CHASSIS
VOLUME BOARD (COMPONENT SIDE)
HEADPHONE BOARD (COMPONENT SIDE)
1
2
3
4
5
6
7
8
9
10
11
12

Connector

Connect
between b
plugging in

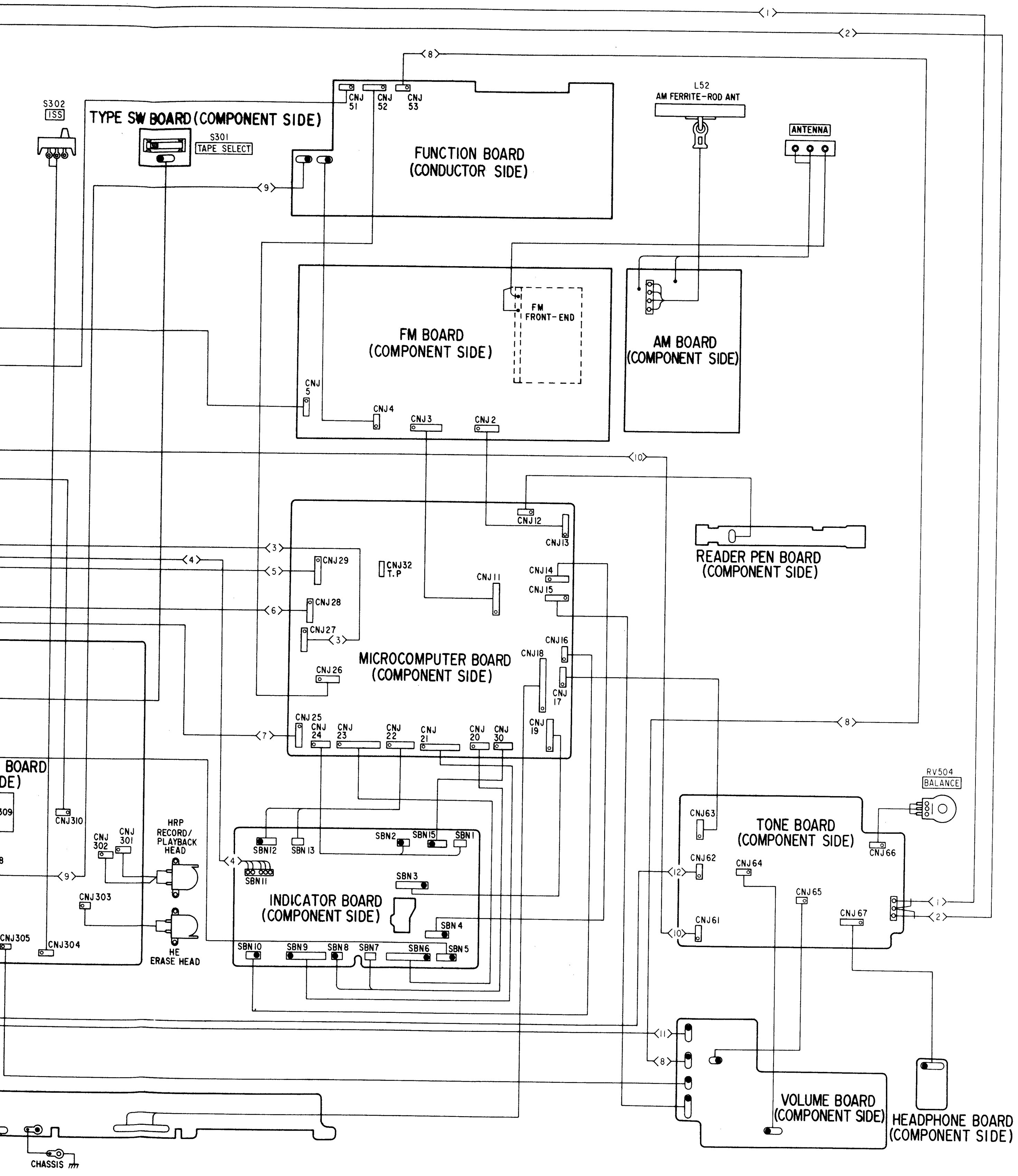
connector number

- The co
diagram

The co
board a
different
tion) and

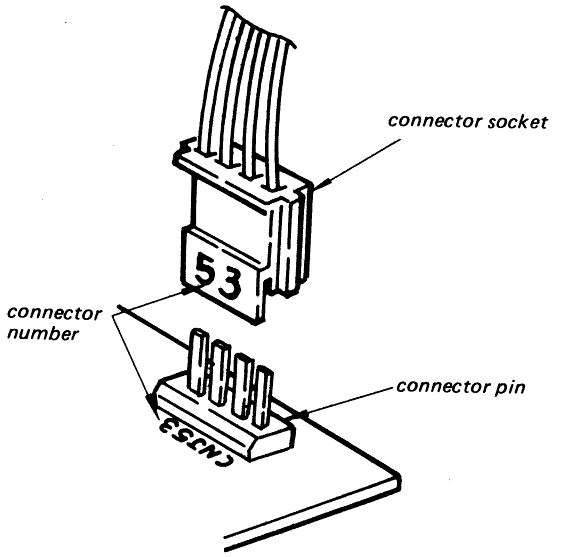
(Pin side)

CNJ301
|
CNJ309
CNJ901
|
CNJ909

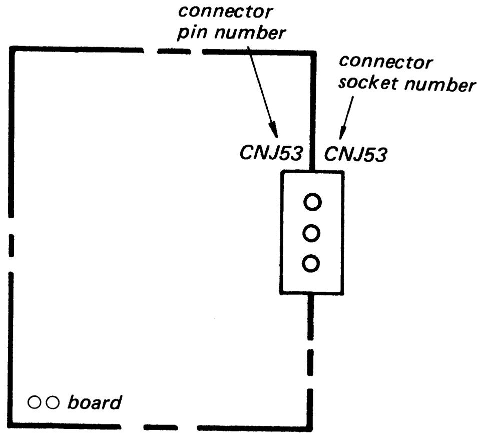

S302
1SS
TYPE SW BOARD (COMPONENT SIDE)
S301
TAPE SELECT
CNJ 51
CNJ 52
CNJ 53
FUNCTION BOARD
(CONDUCTOR SIDE)
L52
AM FERRITE-ROD ANT
ANTENNA
FM BOARD
(COMPONENT SIDE)
FM FRONT-END
AM BOARD
(COMPONENT SIDE)
CNJ 5
CNJ4
CNJ3
CNJ2
READER PEN BOARD
(COMPONENT SIDE)
MICROCOMPUTER BOARD
(COMPONENT SIDE)
CNJ12
CNJ13
CNJ29
CNJ32
T.P
CNJ11
CNJ14
CNJ15
CNJ28
CNJ27
CNJ16
CNJ18
CNJ26
CNJ 17
CNJ25
CNJ 24
CNJ 23
CNJ 22
CNJ 21
CNJ 20
CNJ 30
CNJ 19
BOARD
DE)
CNJ310
CNJ 302
CNJ 301
HRP
RECORD/
PLAYBACK
HEAD
CNJ303
HE
ERASE HEAD
CNJ305
CNJ304
INDICATOR BOARD
(COMPONENT SIDE)
SBN12
SBN 13
SBN11
SBN2
SBN15
SBN1
SBN3
SBN4
SBN10
SBN9
SBN8
SBN7
SBN6
SBN5
RV504
BALANCE
TONE BOARD
(COMPONENT SIDE)
CNJ63
CNJ62
CNJ64
CNJ65
CNJ66
CNJ67
CNJ61
VOLUME BOARD
(COMPONENT SIDE)
HEADPHONE BOARD
(COMPONENT SIDE)
CHASSIS

Connector Number

Connectors are used on this model for connection between boards. Check the connector number before plugging in.


connector socket
53
connector number
connector pin
CNJ53

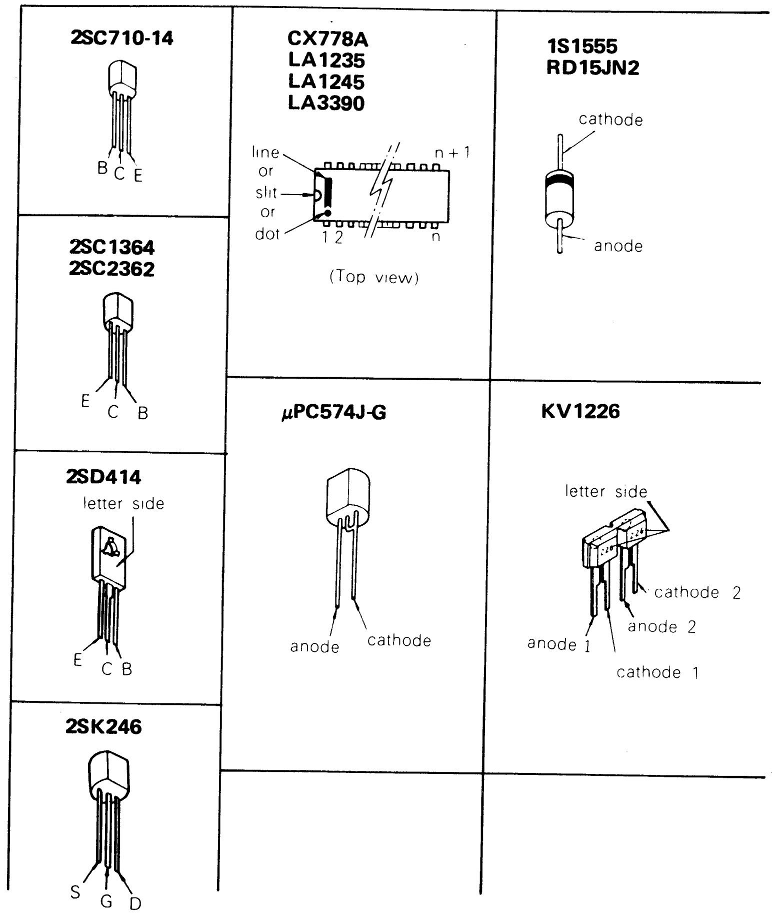
- The connector number indications on the circuit diagram are as shown below.


connector pin number
connector socket number
CNJ53
CNJ53
○○ board

The connector numbers on the REC/PLAY board and system control board (A), (B) are different on the pin side (3 digit number indication) and socket side (2 digit number indication).

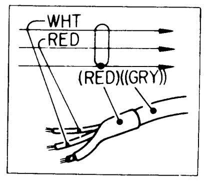
(Pin side)		(Socket side)
CNJ301	→	31
|		|
CNJ309	→	39
CNJ901	→	91
|		|
CNJ909	→	99

4-2. MOUNTING DIAGRAM – *TUNER SECTION* –


2SC710-14
B C E
2SC1364
2SC2362
E C B
2SD414
letter side
E C B
2SK246
S G D
CX778A
LA1235
LA1245
LA3390
line or slit or dot
n + 1
1 2
n
(Top view)
μPC574J-G
anode
cathode
1S1555
RD15JN2
cathode
anode
KV1226
letter side
cathode 2
anode 2
anode 1
cathode 1

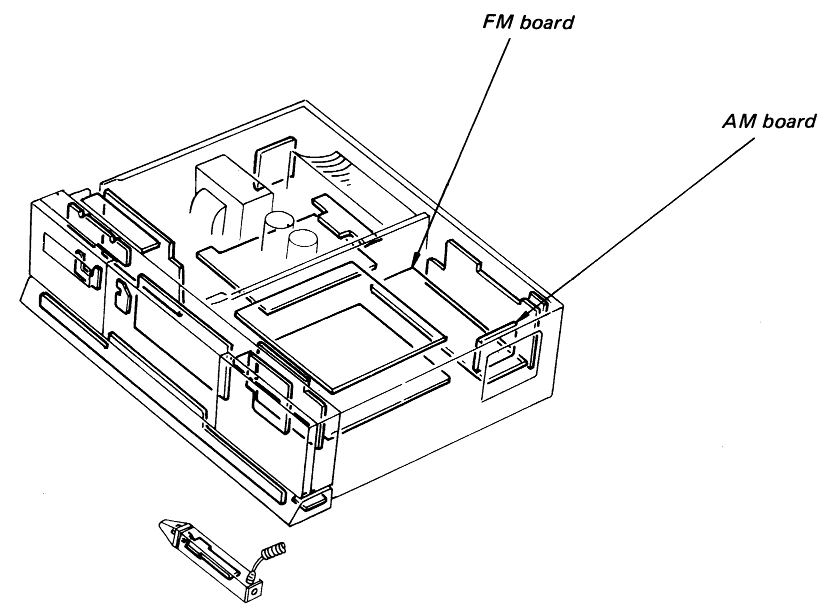
Note:

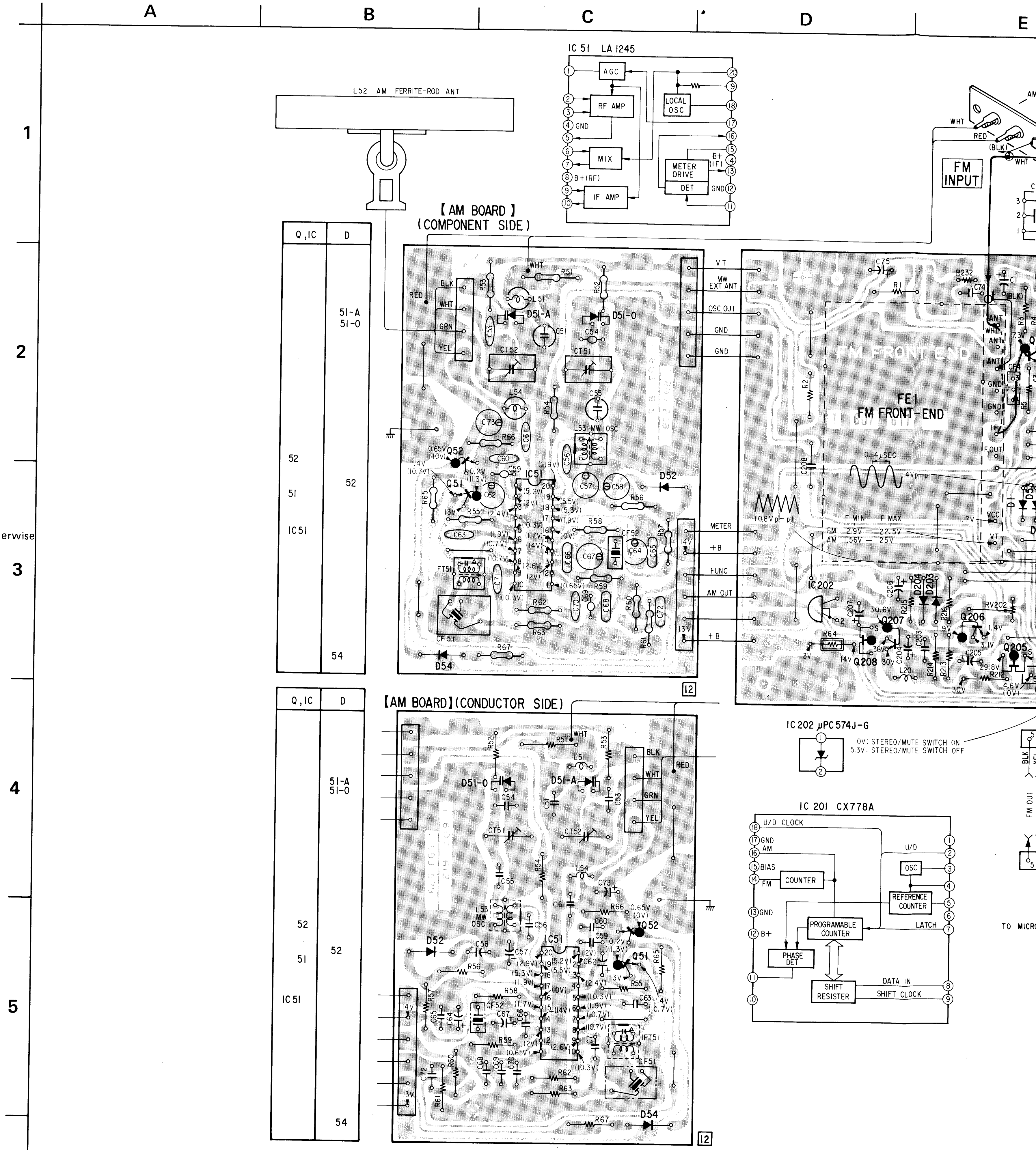
- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

- ■ : part mounted on the conductor side.
- [:]← : indicates side identified with part number.
- ▨ : B+ pattern
- ━━▶━ : signal path
- ━ ━ ━▶ : L-CH signal path
- ━··━▶ : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
  (STEREO/MUTE switch: ON)
  no mark: FM detuned
  < > : FM tuned
  ≪ ≫ : STEREO indication
  ( ) : AM detuned

CIRCUIT BOARD LOCATION

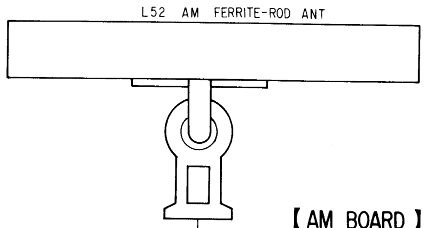

FM board
AM board

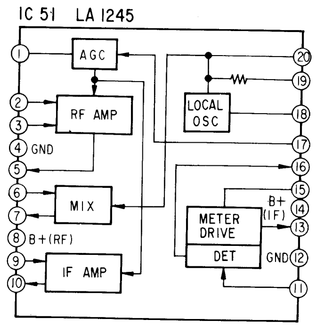

A
B
C
D
E
1
2
3
4
5
IC 51 LA1245
AGC
RF AMP
LOCAL OSC
MIX
METER DRIVE
DET
IF AMP
B+ (IF)
B+ (RF)
GND
L52 AM FERRITE-ROD ANT
【AM BOARD】
(COMPONENT SIDE)
Q, IC
D
51-A
51-O
52
51
IC51
54
VT
MW EXT ANT
OSC OUT
GND
METER
+B
FUNC
AM OUT
FM INPUT
WHT
RED
(BLK)
FM FRONT END
FE1
FM FRONT-END
0.14μSEC
4Vp-p
(0.8Vp-p)
F MIN F MAX
FM 2.9V – 22.5V
AM 1.56V – 25V
IC202
Q207
Q208
Q206
Q205
RV202
【AM BOARD】(CONDUCTOR SIDE)
IC202 μPC574J-G
0V: STEREO/MUTE SWITCH ON
5.3V: STEREO/MUTE SWITCH OFF
IC 201 CX778A
U/D CLOCK
GND
AM
BIAS
FM
COUNTER
B+
U/D
OSC
REFERENCE COUNTER
PROGRAMABLE COUNTER
LATCH
PHASE DET
SHIFT RESISTER
DATA IN
SHIFT CLOCK
TO MICRO
FM OUT
12

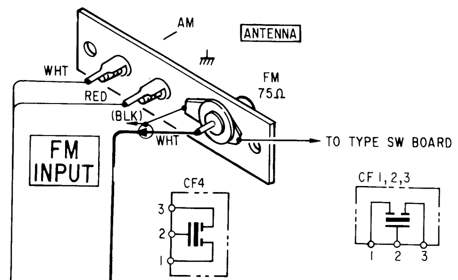
cket.

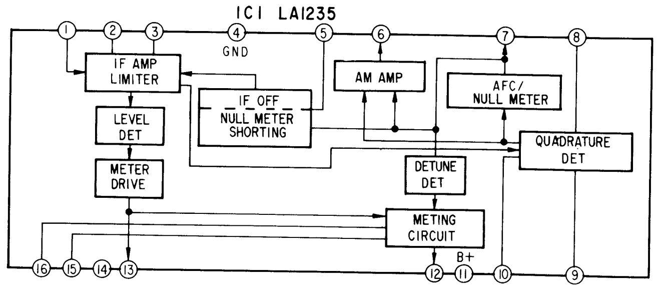
er.

ss otherwise


L52 AM FERRITE-ROD ANT

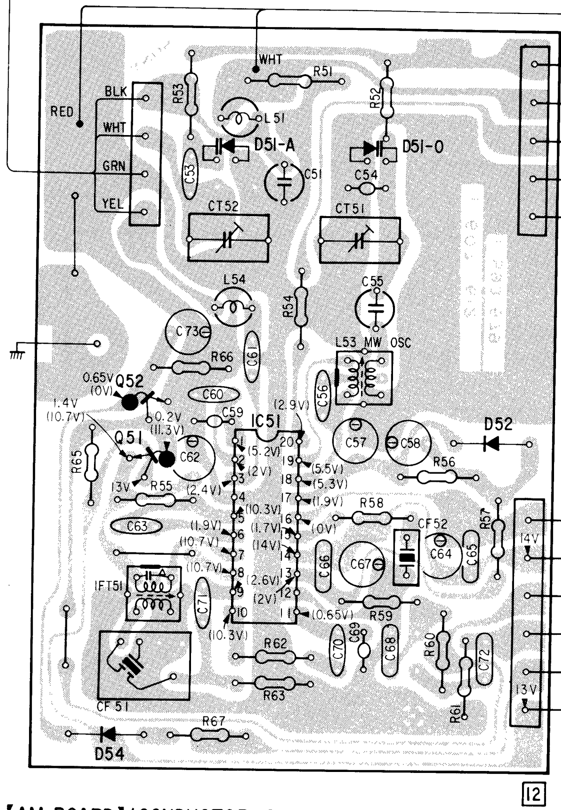

IC 51 LA 1245
AGC
RF AMP
LOCAL OSC
MIX
METER DRIVE
DET
IF AMP
GND
B+(RF)
B+ (IF)


AM
ANTENNA
FM 75Ω
WHT
RED
(BLK)
TO TYPE SW BOARD
FM INPUT
CF4
CF 1, 2, 3

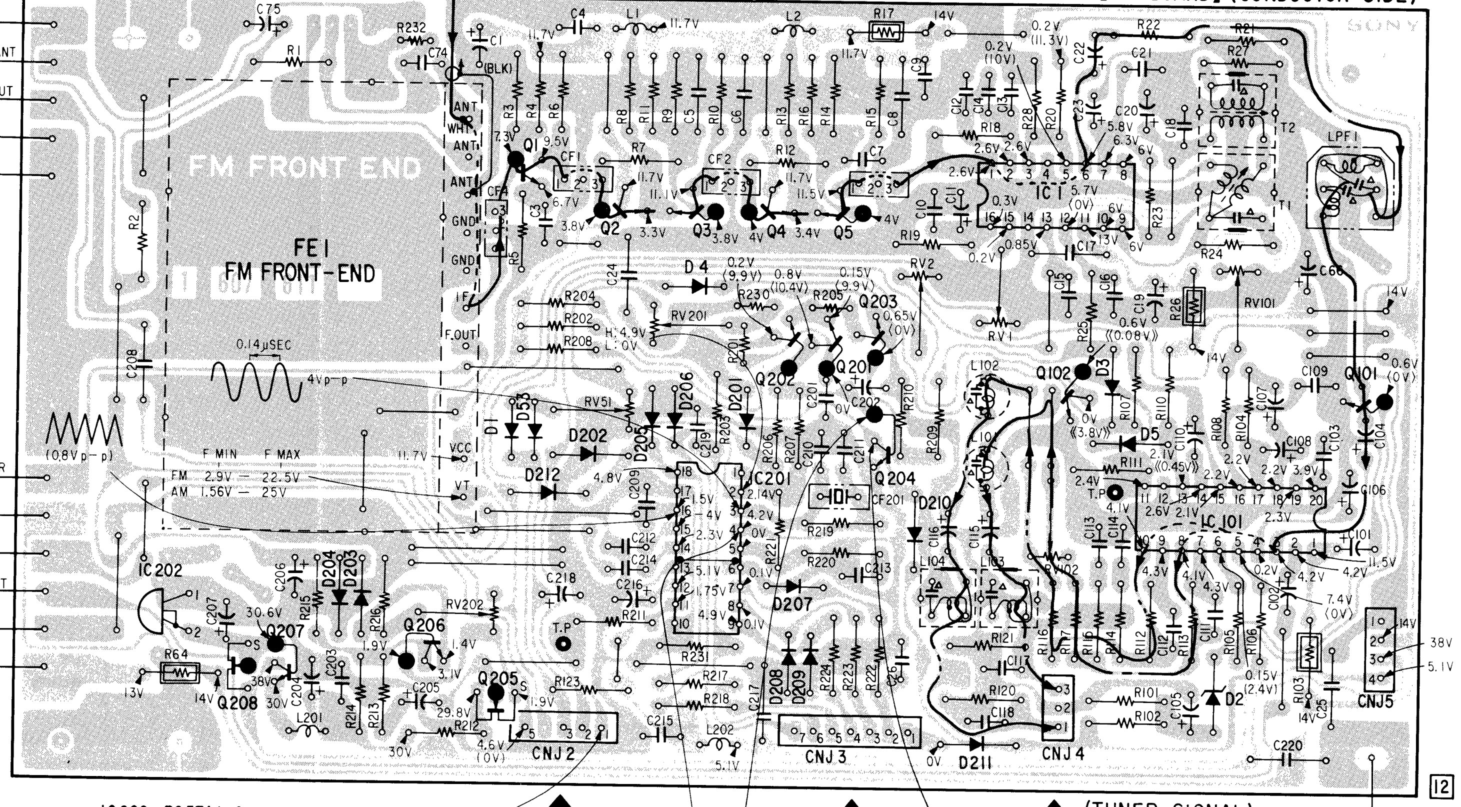

IC1 LA1235
IF AMP LIMITER
IF OFF NULL METER SHORTING
AM AMP
AFC/ NULL METER
LEVEL DET
METER DRIVE
QUADRATURE DET
DETUNE DET
METING CIRCUIT
GND
B+

Q, IC	D
	51-A 51-0
52	
51	52
IC51	
	54

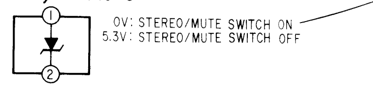
【AM BOARD】
(COMPONENT SIDE)


RED
BLK
WHT
GRN
YEL
D51-A
D51-0
CT52
CT51
L54
L53 MW OSC
Q52
Q51
IC51
D52
IFT51
CF51
CF52
D54
VT
MW EXT ANT
OSC OUT
GND
METER
+B
FUNC
AM OUT
12

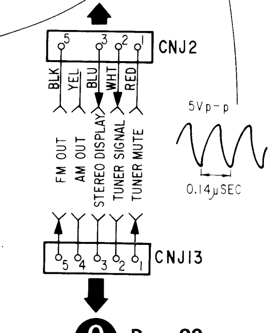
【FM BOARD】(CONDUCTOR SIDE)


SONY
FM FRONT END
FE1 FM FRONT-END
0.14μSEC
4Vp-p
(0.8Vp-p)
F MIN F MAX
FM 2.9V — 22.5V
AM 1.56V — 25V
IC 1
IC 101
IC 202
Q1
Q2
Q3
Q4
Q5
Q101
Q102
Q201
Q202
Q203
Q204
Q205
Q206
Q207
Q208
CNJ 2
CNJ 3
CNJ 4
CNJ 5
LPF1
T1
T2
12

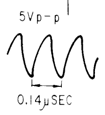
Q, IC	D
IC1 2–5	
	4
203 202,201	
	3
102,101	201 205,206 1,53,5
204	202
	212
IC101 IC201	210
	207 204,203
IC202	
206	208,209
208,207	
205	2
	211


IC202 μPC574J-G

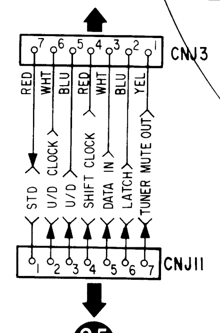
0V: STEREO/MUTE SWITCH ON
5.3V: STEREO/MUTE SWITCH OFF


CNJ2
BLK
YEL
BLU
WHT
RED
FM OUT
AM OUT
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE
CNJ13

9 Page 90
TO MICROCOMPUTER BOARD
CNJ 13



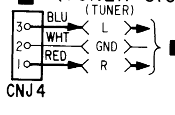
0.6V : STEREO/MUTE SWITCH OFF
0V (0.6V) : STEREO/MUTE SWITCH ON


CNJ3
RED
WHT
BLU
GRN
WHT
YEL
STD CLOCK
U/D
SHIFT CLOCK
DATA IN
LATCH
TUNER MUTE OUT
CNJ11

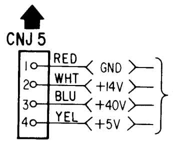
25 Page 90
TO MICROCOMPUTER BOARD
CNJ 11

0V: STEREO/MUTE SWITCH OFF
8.8V (0V): STEREO/MUTE SWITCH ON

(TUNER SIGNAL)


BLU
WHT
RED
(TUNER)
L
GND
R
CNJ4

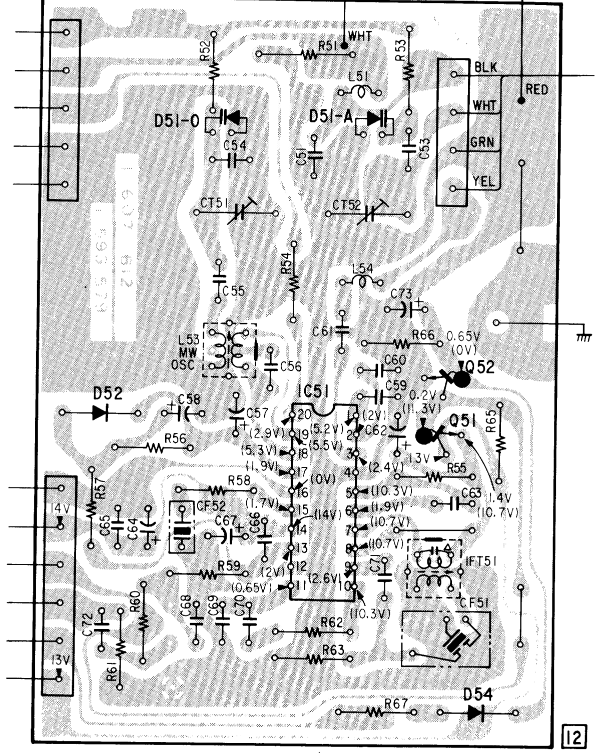
11
TO FUNCTION BOARD
Page 81

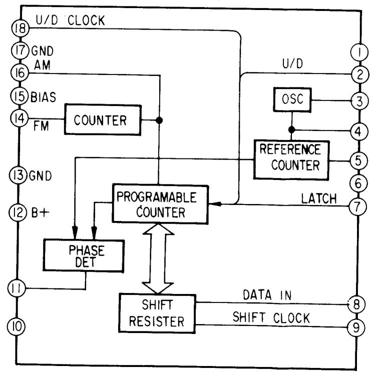

CNJ 5
RED
WHT
BLU
YEL
GND
+14V
+40V
+5V

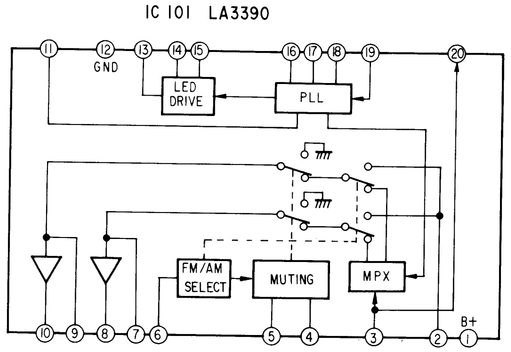
2 Page 107
TO POWER SUPPLY BOARD

【AM BOARD】(CONDUCTOR SIDE)

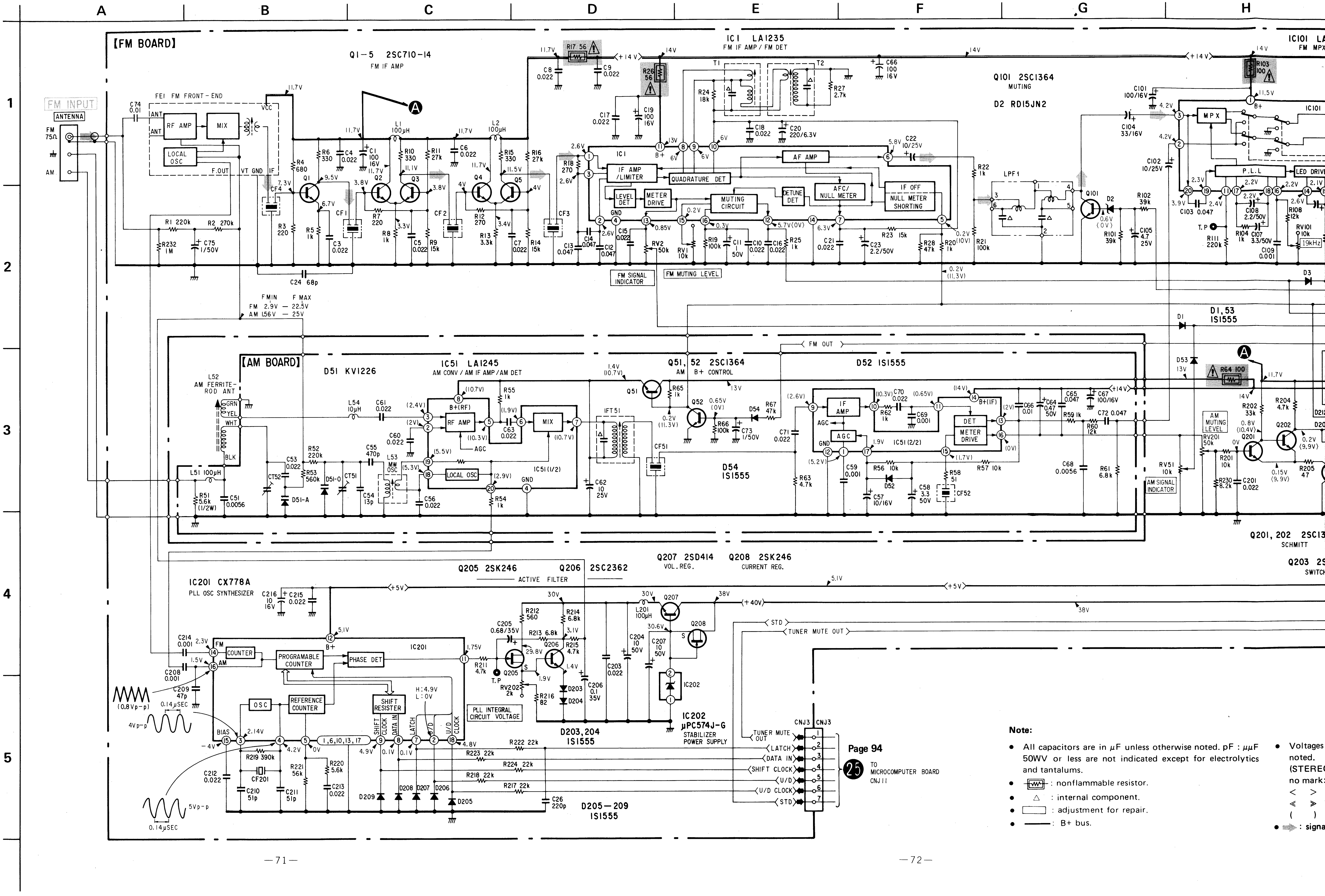
Q, IC	D
	51-A 51-0
52	
51	52
IC51	
	54


BLK
WHT
GRN
YEL
RED
D51-0
D51-A
CT51
CT52
L54
L53 MW OSC
IC51
Q52
Q51
D52
CF52
IFT51
CF51
D54
12


IC 201 CX778A
U/D CLOCK
GND
AM
BIAS
FM
COUNTER
OSC
REFERENCE COUNTER
PROGRAMABLE COUNTER
PHASE DET
SHIFT RESISTER
U/D
LATCH
DATA IN
SHIFT CLOCK
B+


IC 101 LA3390
GND
LED DRIVE
PLL
FM/AM SELECT
MUTING
MPX
B+

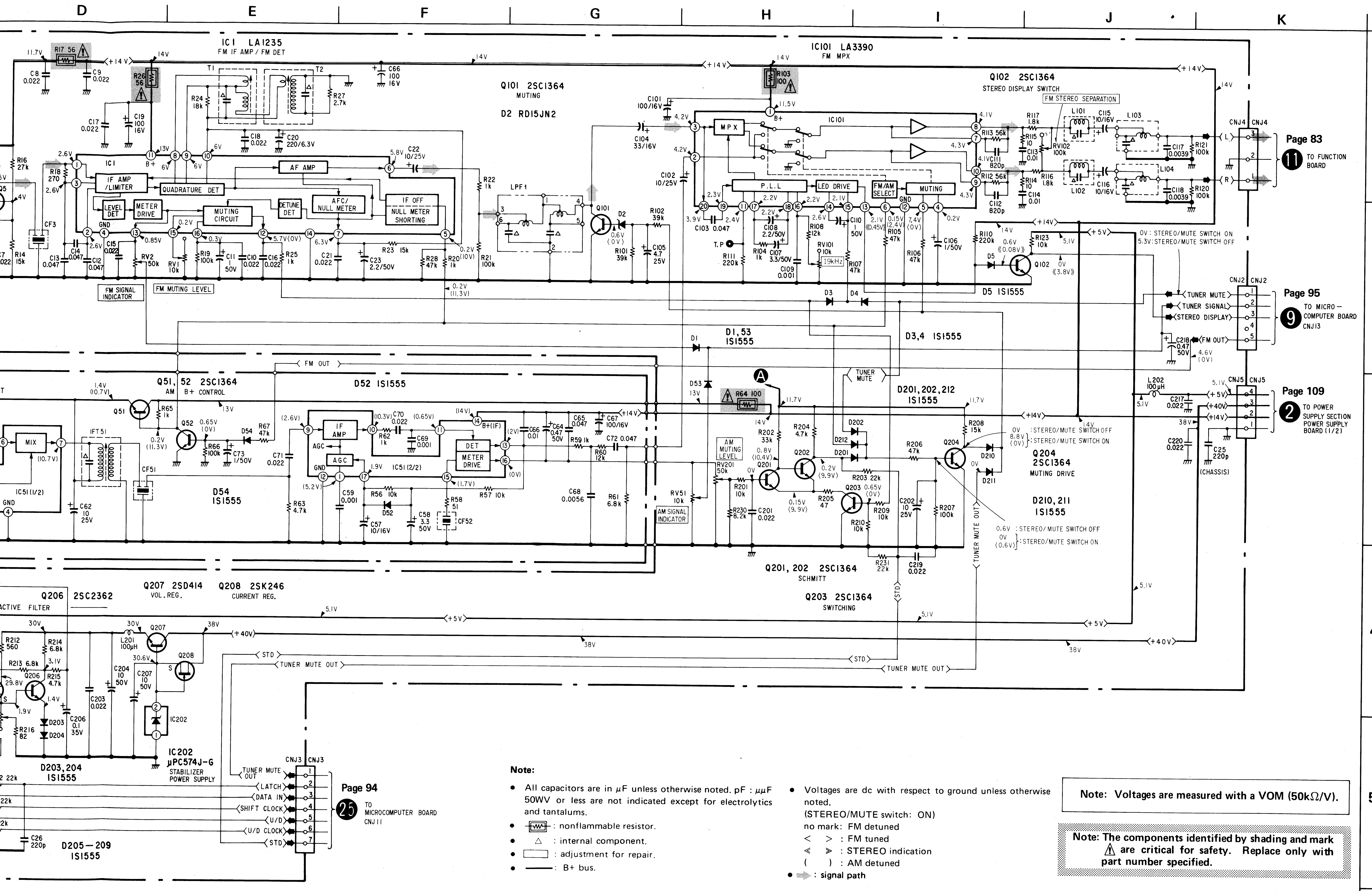
4-3. SCHEMATIC DIAGRAM *– TUNER SECTION –*


A
B
C
D
E
F
G
H
1
2
3
4
5
[FM BOARD]
FM INPUT
ANTENNA
FM 75Ω
AM
FE1 FM FRONT-END
RF AMP
MIX
LOCAL OSC
VCC
ANT
F.OUT
VT GND
IF
Q1-5 2SC710-14
FM IF AMP
IC1 LA1235
FM IF AMP / FM DET
IF AMP /LIMITER
QUADRATURE DET
LEVEL DET
METER DRIVE
MUTING CIRCUIT
DETUNE DET
AFC/ NULL METER
IF OFF
NULL METER SHORTING
AF AMP
Q101 2SC1364
MUTING
D2 RD15JN2
LPF1
IC101 LA
FM MPX
MPX
P.L.L
LED DRIVE
FM SIGNAL INDICATOR
FM MUTING LEVEL
F MIN F MAX
FM 2.9V — 22.5V
AM 1.56V — 25V
D1, 53
1S1555
FM OUT
[AM BOARD]
L52 AM FERRITE-ROD ANT
D51 KV1226
IC51 LA1245
AM CONV / AM IF AMP / AM DET
B+(RF)
RF AMP
MIX
AGC
LOCAL OSC
IC51 (1/2)
Q51, 52 2SC1364
AM B+ CONTROL
D52 1S1555
D54 1S1555
IFT51
IF AMP
DET
METER DRIVE
B+(IF)
IC51 (2/2)
AM MUTING LEVEL
AM SIGNAL INDICATOR
Q201, 202 2SC1
SCHMITT
Q203 2S
SWITCH
IC201 CX778A
PLL OSC SYNTHESIZER
COUNTER
PROGRAMABLE COUNTER
PHASE DET
OSC
REFERENCE COUNTER
SHIFT RESISTER
SHIFT CLOCK
DATA IN
LATCH
U/D
U/D CLOCK
PLL INTEGRAL CIRCUIT VOLTAGE
H: 4.9V
L: 0V
(0.8Vp-p)
0.14μSEC
4Vp-p
5Vp-p
Q205 2SK246
Q206 2SC2362
ACTIVE FILTER
Q207 2SD414
VOL. REG.
Q208 2SK246
CURRENT REG.
IC202 μPC574J-G
STABILIZER POWER SUPPLY
D203, 204 1S1555
D205—209 1S1555
STD
TUNER MUTE OUT
LATCH
DATA IN
SHIFT CLOCK
U/D
U/D CLOCK
CNJ3
Page 94
㉕ TO MICROCOMPUTER BOARD CNJ11

Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- ▭ : nonflammable resistor.
- △ : internal component.
- ▭ : adjustment for repair.
- ——: B+ bus.

- Voltages
noted.
(STERE
no mark:
< >
≪ ≫
( )
- ➡ : signa


D
E
F
G
H
I
J
K
1
2
3
4
5
IC1 LA1235
FM IF AMP / FM DET
IF AMP /LIMITER
QUADRATURE DET
AF AMP
LEVEL DET
METER DRIVE
MUTING CIRCUIT
DETUNE DET
AFC/ NULL METER
IF OFF NULL METER SHORTING
FM SIGNAL INDICATOR
FM MUTING LEVEL
LPF1
Q101 2SC1364
MUTING
D2 RD15JN2
IC101 LA3390
FM MPX
MPX
P.L.L
LED DRIVE
FM/AM SELECT
MUTING
Q102 2SC1364
STEREO DISPLAY SWITCH
FM STEREO SEPARATION
D5 1S1555
0V : STEREO/MUTE SWITCH ON
5.3V : STEREO/MUTE SWITCH OFF
Page 83
⑪ TO FUNCTION BOARD
CNJ4
Page 95
⑨ TO MICRO-COMPUTER BOARD CNJ13
CNJ2
TUNER MUTE
TUNER SIGNAL
STEREO DISPLAY
FM OUT
D1, 53 1S1555
D3,4 1S1555
Q51, 52 2SC1364
AM B+ CONTROL
D52 1S1555
D54 1S1555
IF AMP
AGC
DET
METER DRIVE
IC51 (2/2)
IC51 (1/2)
MIX
IFT51
CF51
CF52
AM SIGNAL INDICATOR
AM MUTING LEVEL
TUNER MUTE
D201, 202, 212 1S1555
Q204 2SC1364
MUTING DRIVE
D210, 211 1S1555
Q201, 202 2SC1364
SCHMITT
Q203 2SC1364
SWITCHING
Page 109
② TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)
CNJ5
(CHASSIS)
Q206 2SC2362
ACTIVE FILTER
Q207 2SD414
VOL. REG.
Q208 2SK246
CURRENT REG.
IC202 μPC574J-G
STABILIZER POWER SUPPLY
D203, 204 1S1555
D205—209 1S1555
CNJ3
TUNER MUTE OUT
LATCH
DATA IN
SHIFT CLOCK
U/D
U/D CLOCK
STD
Page 94
㉕ TO MICROCOMPUTER BOARD CNJ11
TUNER MUTE OUT
+14V
+5V
+40V

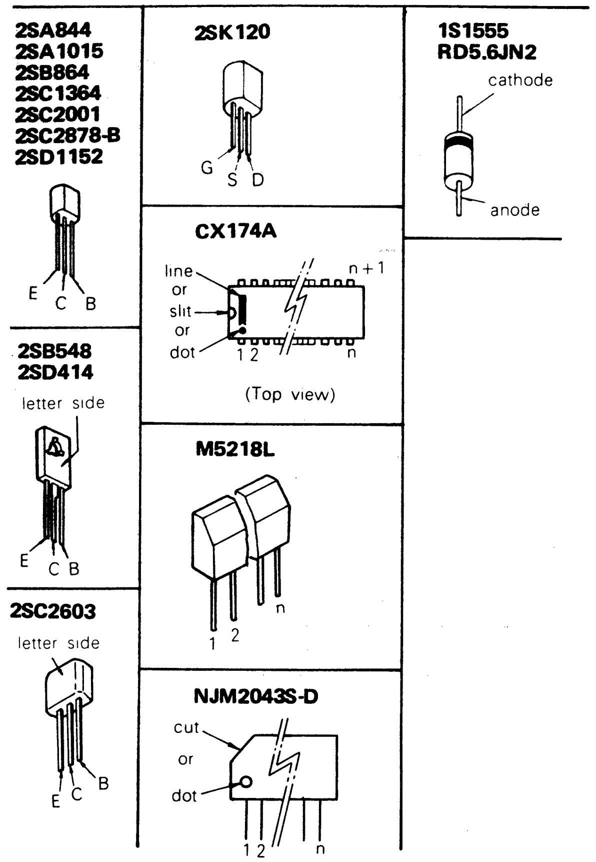
Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- ▭ : nonflammable resistor.
- △ : internal component.
- ▭ : adjustment for repair.
- ——: B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
  (STEREO/MUTE switch: ON)
  no mark: FM detuned
  < > : FM tuned
  ≪ ≫ : STEREO indication
  ( ) : AM detuned
- ➡ : signal path

Note: Voltages are measured with a VOM (50kΩ/V).

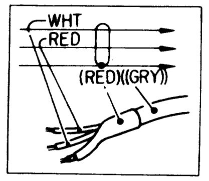
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

4-4. MOUNTING DIAGRAM – *RECORD/PLAYBACK AMP SECTION* –


2SA844
2SA1015
2SB864
2SC1364
2SC2001
2SC2878-B
2SD1152
E C B
2SB548
2SD414
letter side
E C B
2SC2603
letter side
E C B
2SK120
G S D
CX174A
line or slit or dot
n+1
1 2
n
(Top view)
M5218L
1 2
n
NJM2043S-D
cut or dot
1 2
n
1S1555
RD5.6JN2
cathode
anode

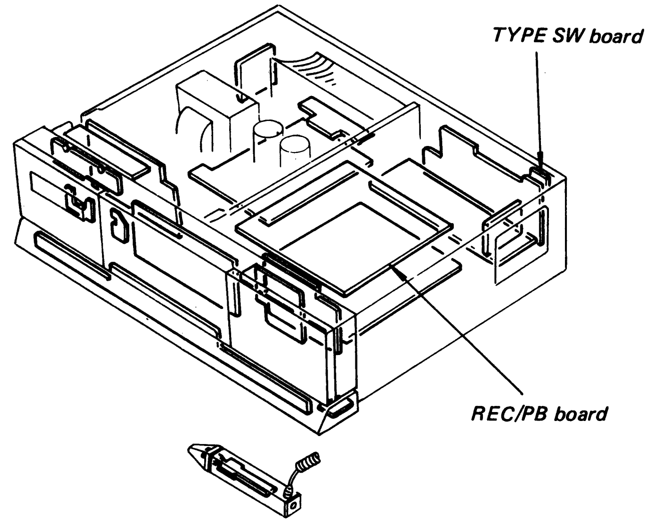
Note:

- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

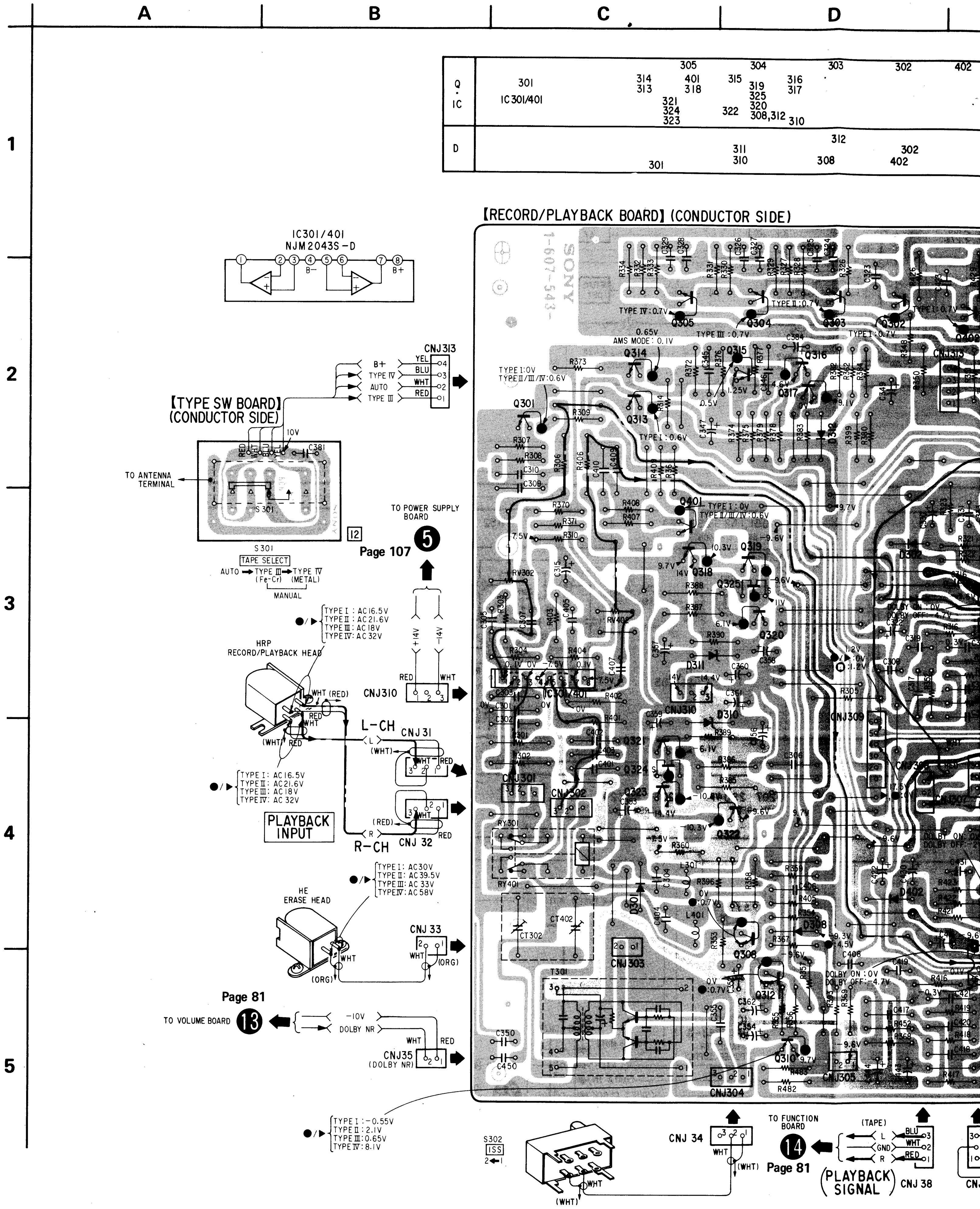
- ○— : parts extracted from the component side.
- ■ : part mounted on the conductor side.
- ▨ : B + pattern
- ━━▶━━ : signal path
- ━━━▶ : L-CH signal path
- ━━━▶ : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions.
  no mark: STOP mode
  - ● : REC mode
  - ▶ : FWD mode
  - ●/▶ : REC/FWD mode
  - ○ : REC MUTE mode
- AC voltage readings in the bias oscillator with a VTVM.

CIRCUIT BOARD LOCATION


TYPE SW board
REC/PB board

	C	D	
Q · IC	301 IC301/401 314 313 305 401 318 321 324 323	315 322 304 319 325 320 308,312 316 317 310 303 302	402
D	301	311 310 312 308 302 402	

【RECORD/PLAYBACK BOARD】(CONDUCTOR SIDE)


A
B
C
D
1
2
3
4
5
IC301/401
NJM2043S-D
B-
B+
【TYPE SW BOARD】
(CONDUCTOR SIDE)
TO ANTENNA TERMINAL
10V
S301
TAPE SELECT
AUTO → TYPE III → TYPE IV
(Fe-Cr) (METAL)
MANUAL
CNJ313
B+
TYPE IV
AUTO
TYPE III
YEL
BLU
WHT
RED
TO POWER SUPPLY BOARD
Page 107
5
+14V
-14V
RED
WHT
CNJ310
TYPE I: AC16.5V
TYPE II: AC21.6V
TYPE III: AC18V
TYPE IV: AC32V
HRP
RECORD/PLAYBACK HEAD
WHT (RED)
L-CH
CNJ31
(WHT)
PLAYBACK INPUT
(RED)
R-CH
CNJ32
TYPE I: AC30V
TYPE II: AC39.5V
TYPE III: AC33V
TYPE IV: AC58V
HE
ERASE HEAD
CNJ33
(ORG)
Page 81
TO VOLUME BOARD
13
-10V
DOLBY NR
CNJ35
(DOLBY NR)
TYPE I: -0.55V
TYPE II: 2.1V
TYPE III: 0.65V
TYPE IV: 8.1V
S302
ISS
CNJ34
TO FUNCTION BOARD
14
Page 81
(TAPE)
L
GND
R
BLU
WHT
RED
CNJ38
(PLAYBACK SIGNAL)
SONY
1-607-543-
TYPE IV: 0.7V
TYPE III: 0.7V
TYPE II: 0.7V
TYPE I: 0.7V
0.65V
AMS MODE: 0.1V
TYPE I: 0V
TYPE II/III/IV: 0.6V
TYPE I: 0.6V
TYPE II/III/IV: 0.6V
Q301
Q303
Q304
Q305
Q308
Q309
Q310
Q312
Q313
Q314
Q315
Q316
Q317
Q318
Q319
Q320
Q322
Q324
Q325
Q401
D311
IC301
IC401
RV302
RV401
RY301
RY401
CT302
CT402
T301
L301
L401
CNJ301
CNJ302
CNJ303
CNJ304
CNJ305
CNJ309
CNJ310
CNJ311
CNJ313
DOLBY ON: 0V
DOLBY OFF: -4.7V

the jacket.

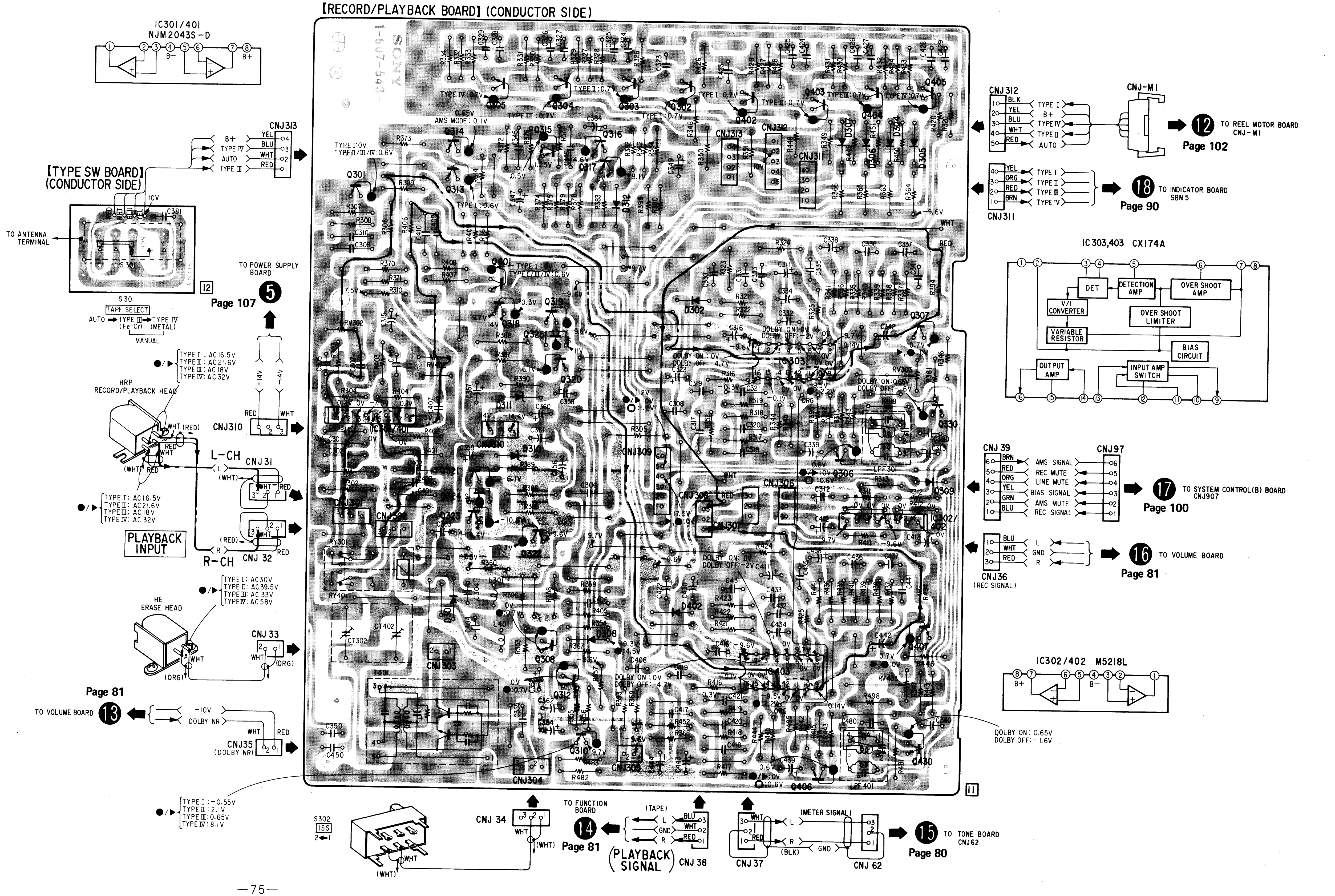
onent side.
side.

nd unless otherwise

ditions.

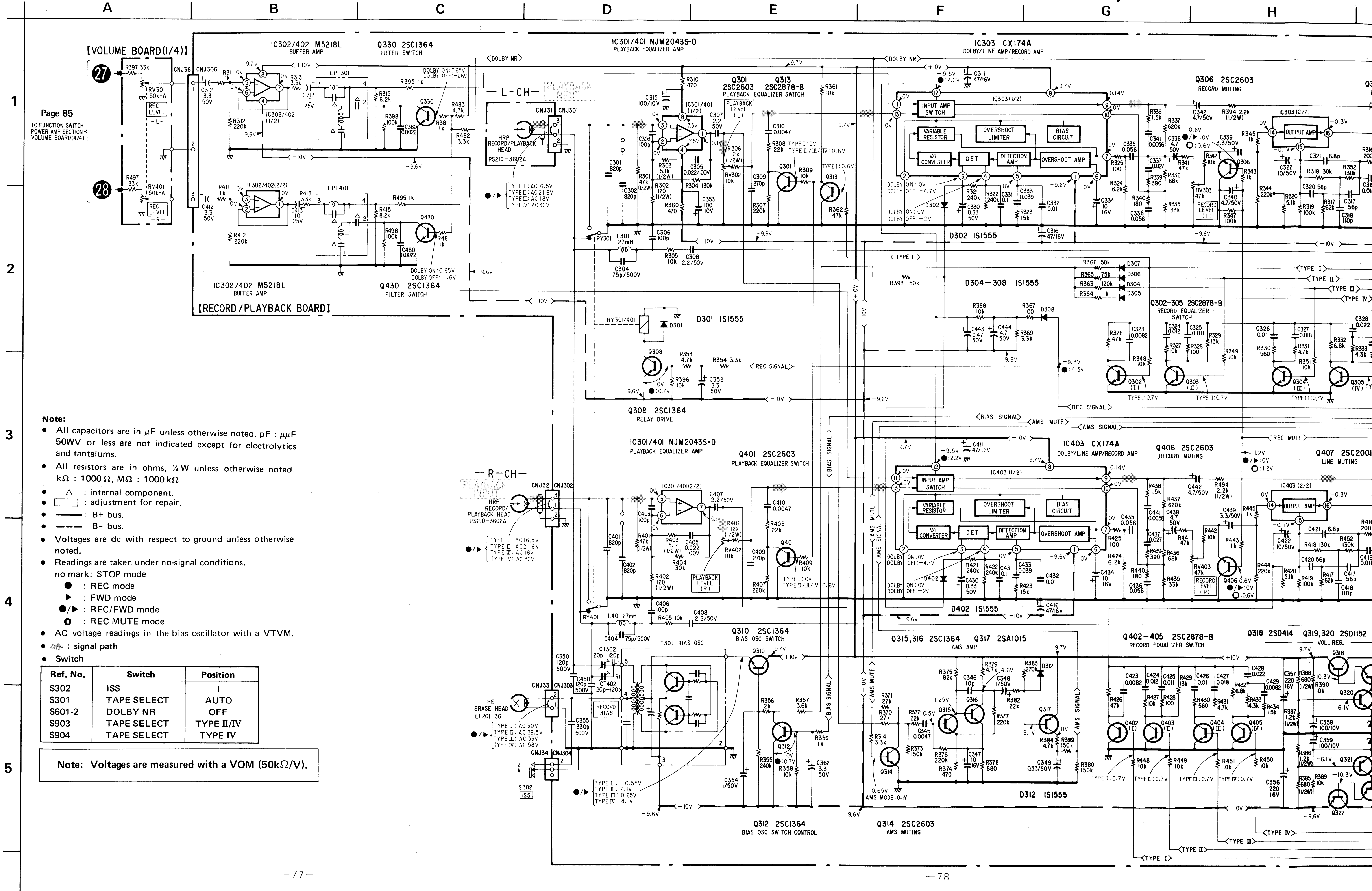
tor with a VTVM.

	C	D	E	F
Q · IC	301 IC301/401 314 313 305 401 318 321 324 323	315 322 304 319 325 320 308,312 316 317 310 303 302	402 403 IC303 IC403 406 306 404 IC302/402	405 307 330 407 430
D	301	311 310 308 312 302 402	307,306 304,305	309



A
B
C
D
E
F
G
1
2
3
4
5
【RECORD/PLAYBACK BOARD】(CONDUCTOR SIDE)
SONY 1-607-543-
IC301/401 NJM2043S-D
B-
B+
【TYPE SW BOARD】(CONDUCTOR SIDE)
TO ANTENNA TERMINAL
S301
TAPE SELECT
AUTO → TYPE III → TYPE IV
(Fe-Cr) (METAL)
MANUAL
CNJ313
B+
TYPE IV
AUTO
TYPE III
YEL
BLU
WHT
RED
10V
TO POWER SUPPLY BOARD
5
Page 107
+14V
-14V
CNJ310
RED
WHT
HRP RECORD/PLAYBACK HEAD
TYPE I: AC16.5V
TYPE II: AC21.6V
TYPE III: AC18V
TYPE IV: AC32V
L-CH
R-CH
CNJ 31
CNJ 32
PLAYBACK INPUT
HE ERASE HEAD
TYPE I: AC30V
TYPE II: AC39.5V
TYPE III: AC33V
TYPE IV: AC58V
CNJ 33
(ORG)
TO VOLUME BOARD
13
Page 81
-10V
DOLBY NR
CNJ35
(DOLBY NR)
TYPE I: -0.55V
TYPE II: 2.1V
TYPE III: 0.65V
TYPE IV: 8.1V
S302
ISS
CNJ 34
TO FUNCTION BOARD
14
Page 81
(TAPE)
L
GND
R
(PLAYBACK SIGNAL)
CNJ 38
CNJ 37
(METER SIGNAL)
(BLK)
GND
CNJ 62
15
Page 80
TO TONE BOARD CNJ62
CNJ312
TYPE I
B+
TYPE IV
TYPE II
AUTO
BLK
YEL
BLU
WHT
RED
CNJ-M1
12
TO REEL MOTOR BOARD CNJ-M1
Page 102
CNJ311
TYPE I
TYPE II
TYPE III
TYPE IV
ORG
BRN
18
TO INDICATOR BOARD SBN5
Page 90
IC303,403 CX174A
DET
DETECTION AMP
OVER SHOOT AMP
V/I CONVERTER
OVER SHOOT LIMITER
VARIABLE RESISTOR
BIAS CIRCUIT
OUTPUT AMP
INPUT AMP SWITCH
CNJ 39
CNJ97
AMS SIGNAL
REC MUTE
LINE MUTE
BIAS SIGNAL
AMS MUTE
REC SIGNAL
GRN
17
TO SYSTEM CONTROL(B) BOARD CNJ907
Page 100
CNJ36
(REC SIGNAL)
16
TO VOLUME BOARD
Page 81
IC302/402 M5218L
DOLBY ON: 0.65V
DOLBY OFF: -1.6V
TYPE IV: 0.7V
TYPE III: 0.7V
TYPE II: 0.7V
TYPE I: 0.7V
AMS MODE: 0.1V
TYPE I: 0V
TYPE II/III/IV: 0.6V
DOLBY ON: 0V
DOLBY OFF: -4.7V
DOLBY OFF: -2V
DOLBY ON: 0.65V
DOLBY OFF: -1.6V
LPF301
LPF401
CT302
CT402
T301
RY301
RY401
RV302
RV303
RV403
IC301/401
IC303
IC403
IC302/402
CNJ303
CNJ304
CNJ305
CNJ306
CNJ307
CNJ308
CNJ309
11
12

4-5. SCHEMATIC DIAGRAM – *RECORD/PLAYBACK AMP SECTION* –

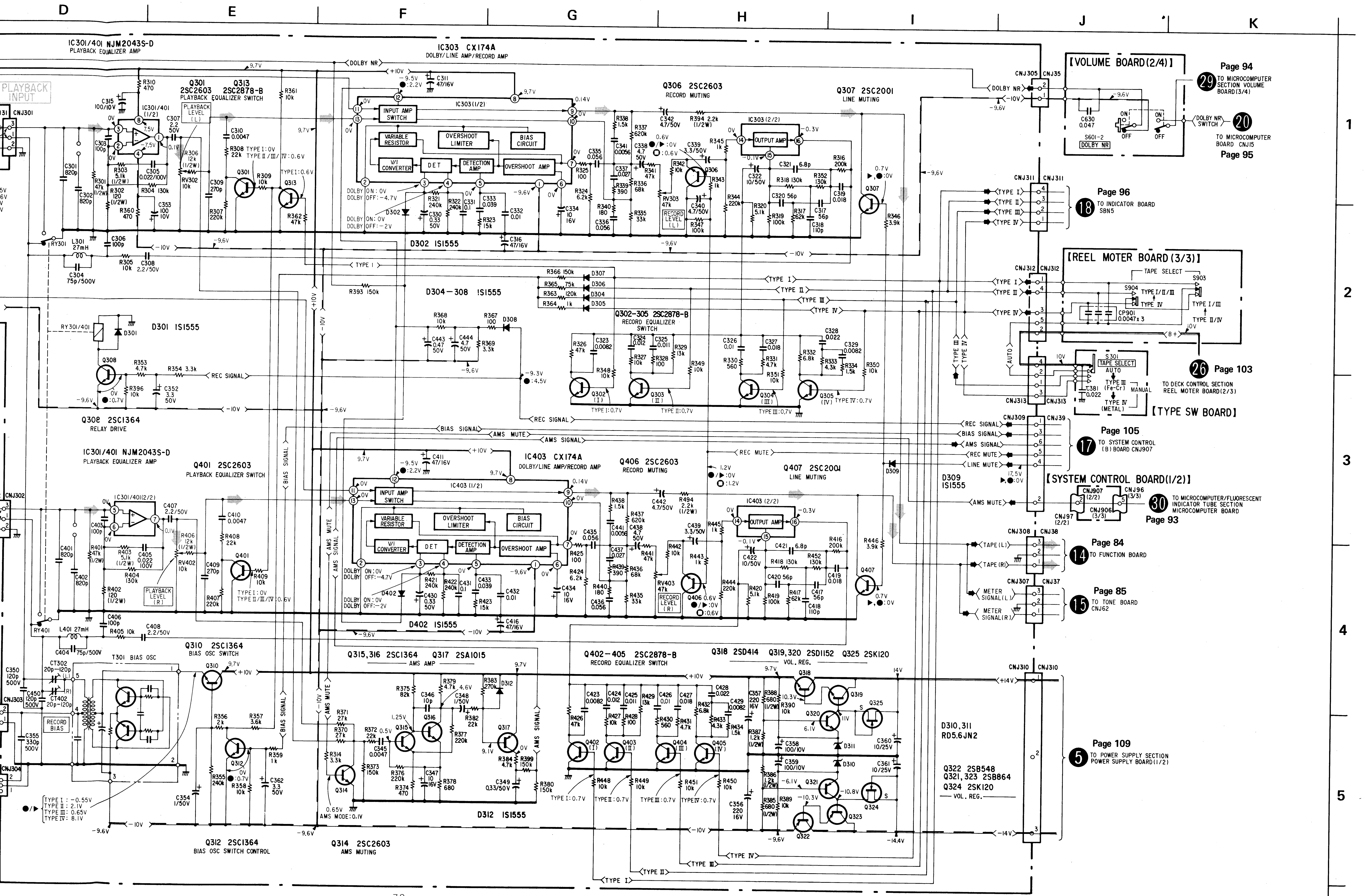

A
B
C
D
E
F
G
H
1
2
3
4
5
[VOLUME BOARD(1/4)]
Page 85
TO FUNCTION SWITCH POWER AMP SECTION VOLUME BOARD(4/4)
[RECORD/PLAYBACK BOARD]
IC302/402 M5218L BUFFER AMP
Q330 2SC1364 FILTER SWITCH
Q430 2SC1364 FILTER SWITCH
IC301/401 NJM2043S-D PLAYBACK EQUALIZER AMP
Q301 2SC2603
Q313 2SC2878-B
PLAYBACK EQUALIZER SWITCH
Q401 2SC2603 PLAYBACK EQUALIZER SWITCH
IC303 CX174A DOLBY/LINE AMP/RECORD AMP
IC403 CX174A DOLBY/LINE AMP/RECORD AMP
Q306 2SC2603 RECORD MUTING
Q406 2SC2603 RECORD MUTING
Q407 2SC200 LINE MUTING
INPUT AMP SWITCH
VARIABLE RESISTOR
OVERSHOOT LIMITER
BIAS CIRCUIT
V/I CONVERTER
DET
DETECTION AMP
OVERSHOOT AMP
OUTPUT AMP
– L-CH –
– R-CH –
PLAYBACK INPUT
HRP RECORD/PLAYBACK HEAD PS210-3602A
HE ERASE HEAD EF201-36
D301 1S1555
D302 1S1555
D402 1S1555
D304–308 1S1555
D312 1S1555
Q302-305 2SC2878-B RECORD EQUALIZER SWITCH
Q308 2SC1364 RELAY DRIVE
Q310 2SC1364 BIAS OSC SWITCH
T301 BIAS OSC
RECORD BIAS
Q312 2SC1364 BIAS OSC SWITCH CONTROL
Q314 2SC2603 AMS MUTING
Q315,316 2SC1364 Q317 2SA1015 AMS AMP
Q402-405 2SC2878-B RECORD EQUALIZER SWITCH
Q318 2SD414 Q319,320 2SD1152 VOL. REG.
DOLBY NR
REC SIGNAL
BIAS SIGNAL
AMS MUTE
AMS SIGNAL
REC MUTE
TYPE I
TYPE II
TYPE III
TYPE IV
S302 ISS
DOLBY ON:0.65V DOLBY OFF:-1.6V

Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- △ : internal component.
- ▭ : adjustment for repair.
- ——: B+ bus.
- – – –: B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions.
  no mark: STOP mode
  - ● : REC mode
  - ▶ : FWD mode
  - ●/▶ : REC/FWD mode
  - ○ : REC MUTE mode
- AC voltage readings in the bias oscillator with a VTVM.
- ➡ : signal path
- Switch

Ref. No.	Switch	Position
S302	ISS	I
S301	TAPE SELECT	AUTO
S601-2	DOLBY NR	OFF
S903	TAPE SELECT	TYPE II/IV
S904	TAPE SELECT	TYPE IV

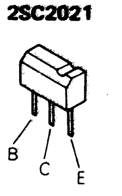
Note: Voltages are measured with a VOM (50kΩ/V).


D
E
F
G
H
I
J
K
1
2
3
4
5
IC301/401 NJM2043S-D
PLAYBACK EQUALIZER AMP
IC303 CX174A
DOLBY/LINE AMP/RECORD AMP
PLAYBACK INPUT
Q301 2SC2603
Q313 2SC2878-B
PLAYBACK EQUALIZER SWITCH
PLAYBACK LEVEL (L)
Q306 2SC2603
RECORD MUTING
Q307 2SC2001
LINE MUTING
INPUT AMP SWITCH
VARIABLE RESISTOR
OVERSHOOT LIMITER
BIAS CIRCUIT
V/I CONVERTER
DET
DETECTION AMP
OVERSHOOT AMP
OUTPUT AMP
IC303(1/2)
IC303(2/2)
DOLBY ON: 0V
DOLBY OFF: −4.7V
DOLBY ON: 0V
DOLBY OFF: −2V
D302 1S1555
RECORD LEVEL (L)
RY301
L301 27mH
D304−308 1S1555
D301 1S1555
RY301/401
Q308 2SC1364
RELAY DRIVE
REC SIGNAL
BIAS SIGNAL
AMS MUTE
AMS SIGNAL
REC MUTE
LINE MUTE
TYPE I
TYPE II
TYPE III
TYPE IV
Q302−305 2SC2878-B
RECORD EQUALIZER SWITCH
TYPE I: 0.7V
TYPE II: 0.7V
TYPE III: 0.7V
TYPE IV: 0.7V
IC301/401 NJM2043S-D
PLAYBACK EQUALIZER AMP
Q401 2SC2603
PLAYBACK EQUALIZER SWITCH
PLAYBACK LEVEL (R)
IC403 CX174A
DOLBY/LINE AMP/RECORD AMP
IC403(1/2)
IC403(2/2)
Q406 2SC2603
RECORD MUTING
Q407 2SC2001
LINE MUTING
RECORD LEVEL (R)
D402 1S1555
D309
RY401
L401 27mH
T301 BIAS OSC
RECORD BIAS
Q310 2SC1364
BIAS OSC SWITCH
Q312 2SC1364
BIAS OSC SWITCH CONTROL
Q315,316 2SC1364
Q317 2SA1015
AMS AMP
Q314 2SC2603
AMS MUTING
AMS MODE: 0.1V
D312 1S1555
Q402−405 2SC2878-B
RECORD EQUALIZER SWITCH
Q318 2SD414
Q319,320 2SD1152
Q325 2SK120
VOL. REG.
D310,311 RD5.6JN2
Q322 2SB548
Q321,323 2SB864
Q324 2SK120
VOL. REG.
TYPE I: −0.55V
TYPE II: 2.1V
TYPE III: 0.65V
TYPE IV: 8.1V
[VOLUME BOARD(2/4)]
CNJ305
CNJ35
DOLBY NR
S601-2
DOLBY NR
ON
OFF
Page 94
㉙ TO MICROCOMPUTER SECTION VOLUME BOARD(3/4)
⑳ TO MICROCOMPUTER BOARD CNJ15
Page 95
CNJ311
Page 96
⑱ TO INDICATOR BOARD SBN5
[REEL MOTER BOARD(3/3)]
CNJ312
TAPE SELECT
S903
S904
TYPE I/II/III
TYPE IV
TYPE I/III
TYPE II/IV
CP901 0.0047x3
AUTO
S301
TAPE SELECT
AUTO
TYPE III (Fe-Cr)
MANUAL
TYPE IV (METAL)
[TYPE SW BOARD]
CNJ313
㉖ Page 103
TO DECK CONTROL SECTION REEL MOTER BOARD(2/3)
CNJ309
CNJ39
Page 105
⑰ TO SYSTEM CONTROL (B) BOARD CNJ907
[SYSTEM CONTROL BOARD(1/2)]
D309 1S1555
CNJ907 (2/2)
CNJ96 (3/3)
CNJ97 (2/2)
CNJ906 (3/3)
㉚ TO MICROCOMPUTER/FLUORESCENT INDICATOR TUBE SECTION MICROCOMPUTER BOARD
Page 93
CNJ308
CNJ38
TAPE (L)
TAPE (R)
Page 84
⑭ TO FUNCTION BOARD
CNJ307
CNJ37
METER SIGNAL (L)
METER SIGNAL (R)
Page 85
⑮ TO TONE BOARD CNJ62
CNJ310
Page 109
⑤ TO POWER SUPPLY SECTION POWER SUPPLY BOARD(1/2)
+14V
−14V
+10V
−10V
−9.6V
B+

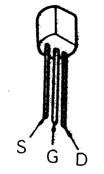
4-6. MOUNTING DIAGRAM

– FUNCTION SWITCH/POWER AMP SECTION –

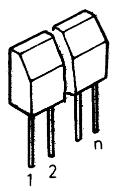
2SA937
2SC2021



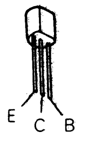
2SK246



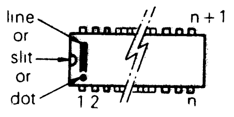
M5218L



2SA1015
2SC1364

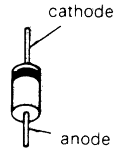


CX770A
LC4066B
TC4066BP

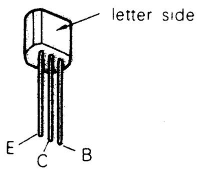

line
or
slit
or
dot
n+1
1 2
n

(Top view)

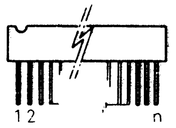
1S1555
RD5.6JN2
RD15JN2


cathode
anode

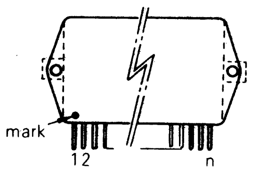
2SC2603


letter side
E
C
B

BA6138



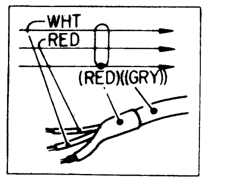
STK465A



(Marking side view)

Note:

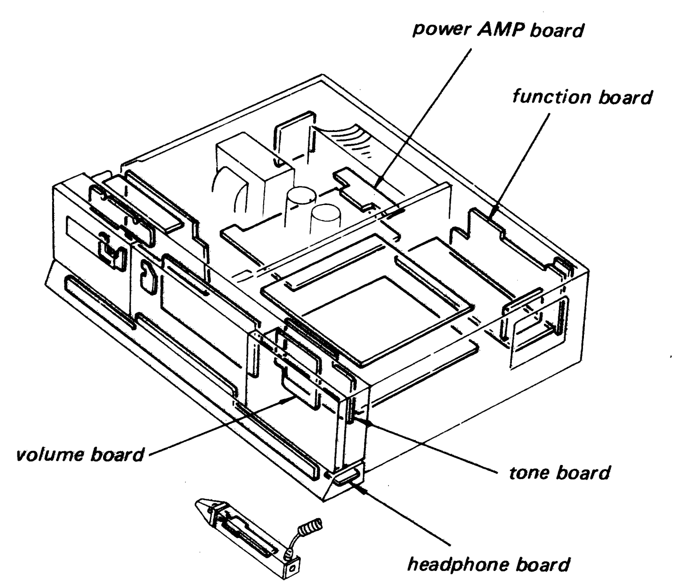
- Color code of sleeving over the end of the jacket.

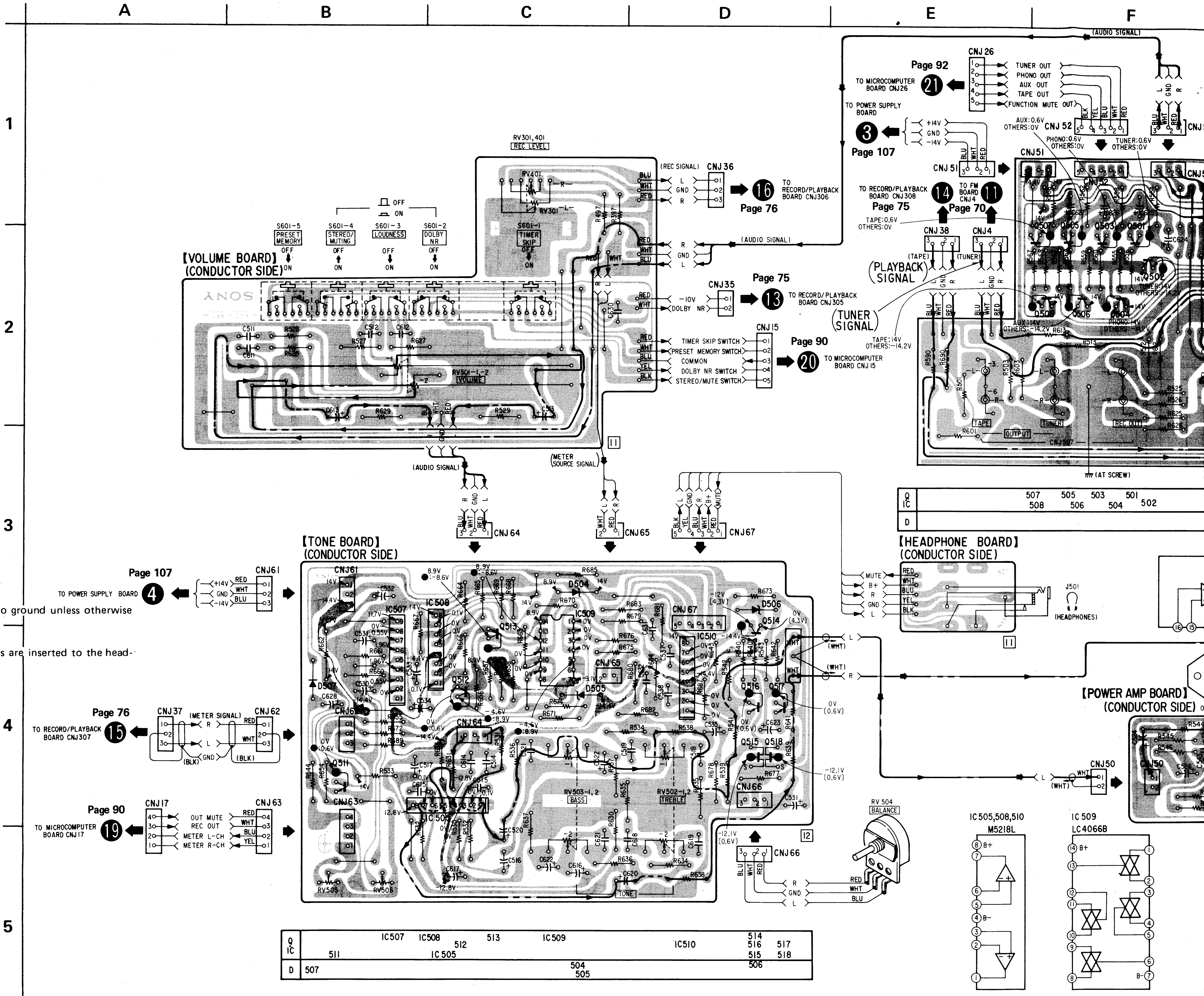

WHT
RED
(RED)(GRY)

- ○―: parts extracted from the component side.
- ■ : part mounted on the conductor side.

- ▨ : B+ pattern
- ▨ : B- pattern
- ━━➡━━ : signal path
- ━━━━➡ : L-CH signal path
- ━━━━➡ : R-CH signal path
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  [   ] : When the headphones are inserted to the headphone jack.
  ● : REC mode

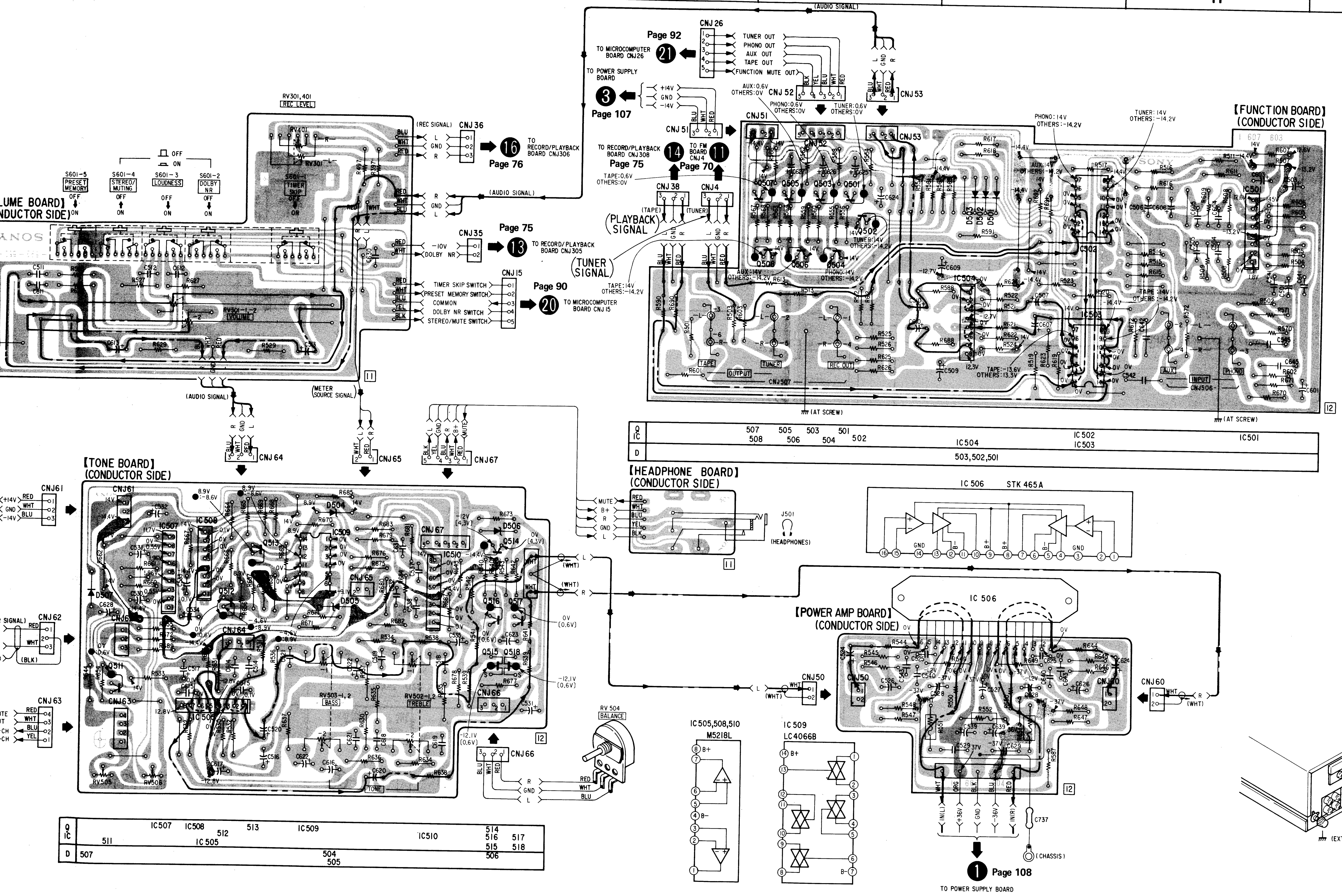
CIRCUIT BOARD LOCATION


power AMP board
function board
volume board
tone board
headphone board


A
B
C
D
E
F
1
2
3
4
5
RV301, 401
REC LEVEL
RV401
RV301
S601-5 PRESET MEMORY
S601-4 STEREO/MUTING
S601-3 LOUDNESS
S601-2 DOLBY NR
S601-1 TIMER SKIP
OFF
ON
【VOLUME BOARD】
(CONDUCTOR SIDE)
RV501-1, -2 VOLUME
(REC SIGNAL)
CNJ36
TO RECORD/PLAYBACK BOARD CNJ306
Page 76
(AUDIO SIGNAL)
CNJ35
Page 75
TO RECORD/PLAYBACK BOARD CNJ305
-10V
DOLBY NR
CNJ15
TIMER SKIP SWITCH
PRESET MEMORY SWITCH
COMMON
DOLBY NR SWITCH
STEREO/MUTE SWITCH
Page 90
TO MICROCOMPUTER BOARD CNJ15
(METER SOURCE SIGNAL)
CNJ64
CNJ65
CNJ67
【TONE BOARD】
(CONDUCTOR SIDE)
Page 107
TO POWER SUPPLY BOARD
CNJ61
+14V
GND
-14V
Page 76
TO RECORD/PLAYBACK BOARD CNJ307
CNJ37
(METER SIGNAL)
CNJ62
Page 90
TO MICROCOMPUTER BOARD CNJ17
CNJ17
OUT MUTE
REC OUT
METER L-CH
METER R-CH
CNJ63
IC507
IC508
IC509
IC510
IC505
RV503-1, 2 BASS
RV502-1, 2 TREBLE
TONE
RV505
RV506
CNJ66
RV504 BALANCE
Page 92
TO MICROCOMPUTER BOARD CNJ26
CNJ26
TUNER OUT
PHONO OUT
AUX OUT
TAPE OUT
FUNCTION MUTE OUT
TO POWER SUPPLY BOARD
Page 107
+14V
GND
-14V
CNJ52
AUX:0.6V OTHERS:0V
PHONO:0.6V OTHERS:0V
TUNER:0.6V OTHERS:0V
CNJ51
TO RECORD/PLAYBACK BOARD CNJ308
Page 75
TO FM BOARD CNJ4
Page 70
TAPE:0.6V OTHERS:0V
CNJ38
CNJ4
(TAPE)
(TUNER)
(PLAYBACK SIGNAL)
(TUNER SIGNAL)
TAPE:14V OTHERS:-14.2V
AUX:14V OTHERS:-14.2V
TAPE
TUNER
REC OUT
OUTPUT
CNJ507
(AT SCREW)
【HEADPHONE BOARD】
(CONDUCTOR SIDE)
MUTE
B+
R
GND
L
J501
(HEADPHONES)
【POWER AMP BOARD】
(CONDUCTOR SIDE)
CNJ50
IC505, 508, 510
M5218L
IC509
LC4066B
B+
B-

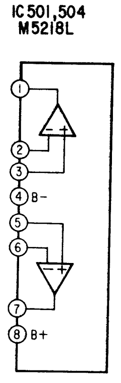
Q IC	511	IC507	IC508 IC505	512	513	IC509	IC510	514 516 515	517 518
D	507					504 505		506	

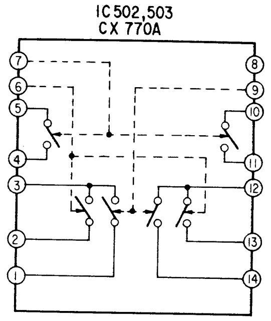
Q IC	507 508	505 506	503 504	501 502
D				

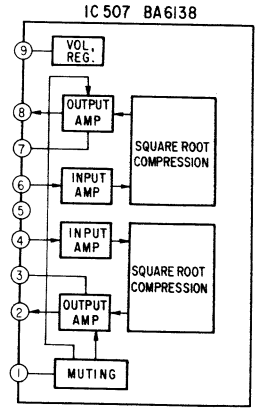

B
C
D
E
F
G
H
I
(AUDIO SIGNAL)
CNJ 26
Page 92
TO MICROCOMPUTER BOARD CNJ26
21
TUNER OUT
PHONO OUT
AUX OUT
TAPE OUT
FUNCTION MUTE OUT
TO POWER SUPPLY BOARD
3
Page 107
+14V
GND
-14V
CNJ 52
CNJ 53
CNJ 51
AUX:0.6V OTHERS:0V
PHONO:0.6V OTHERS:0V
TUNER:0.6V OTHERS:0V
PHONO:14V OTHERS:-14.2V
TUNER:14V OTHERS:-14.2V
【FUNCTION BOARD】(CONDUCTOR SIDE)
TO RECORD/PLAYBACK BOARD CNJ308
14
Page 75
TO FM BOARD CNJ4
11
Page 70
TAPE:0.6V OTHERS:0V
CNJ 38
CNJ4
(TAPE)
(TUNER)
(PLAYBACK SIGNAL)
(TUNER SIGNAL)
TAPE:14V OTHERS:-14.2V
AUX:14V OTHERS:-14.2V
PHONO:14V OTHERS:-14.2V
TUNER:14V OTHERS:-14.2V
TAPE:-13.6V OTHERS:13.3V
TAPE
OUTPUT
TUNER
REC OUT
AUX
INPUT
PHONO
CNJ507
CNJ506
(AT SCREW)
RV301,401 REC LEVEL
S601-5 PRESET MEMORY
S601-4 STEREO/MUTING
S601-3 LOUDNESS
S601-2 DOLBY NR
OFF
ON
S601-1 TIMER SKIP
【VOLUME BOARD】(CONDUCTOR SIDE)
RV301-1,-2 VOLUME
(REC SIGNAL)
CNJ 36
TO RECORD/PLAYBACK BOARD CNJ306
16
Page 76
(AUDIO SIGNAL)
CNJ35
-10V
DOLBY NR
Page 75
13
TO RECORD/PLAYBACK BOARD CNJ305
CNJ15
TIMER SKIP SWITCH
PRESET MEMORY SWITCH
COMMON
DOLBY NR SWITCH
STEREO/MUTE SWITCH
Page 90
20
TO MICROCOMPUTER BOARD CNJ15
(AUDIO SIGNAL)
(METER SOURCE SIGNAL)
CNJ 64
CNJ65
CNJ67
MUTE
【TONE BOARD】(CONDUCTOR SIDE)
CNJ61
CNJ62
CNJ63
RV503-1,2 BASS
RV502-1,2 TREBLE
TONE
RV505
RV506
CNJ66
RV 504 BALANCE
【HEADPHONE BOARD】(CONDUCTOR SIDE)
J501 (HEADPHONES)
IC 506 STK 465A
【POWER AMP BOARD】(CONDUCTOR SIDE)
CNJ50
CNJ60
(WHT)
IN(L)
+36V
GND
-36V
IN(R)
C737
(CHASSIS)
1
Page 108
TO POWER SUPPLY BOARD
IC505,508,510 M5218L
IC 509 LC4066B

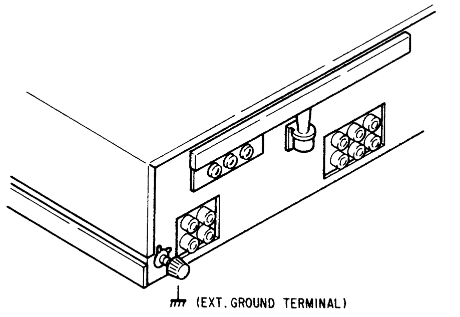
Q IC	507 508	505 506	503 504	501 502	IC504	IC502 IC503	IC501
D					503,502,501		

Q IC	511	IC507	IC508 IC505	512	513	IC509	IC510	514 516 515	517 518
D	507					504 505		506	

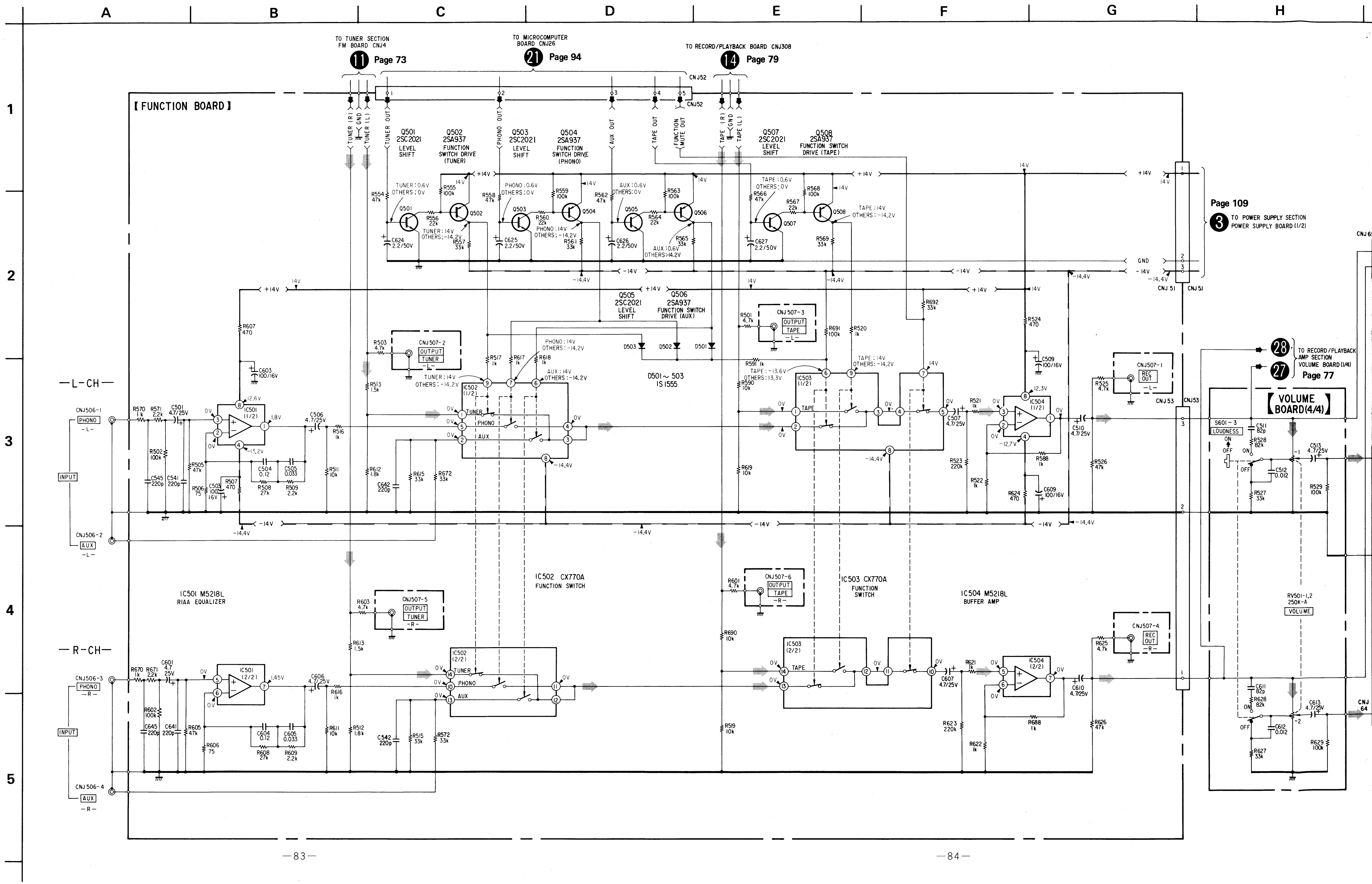

IC501,504 M5218L
B-
B+

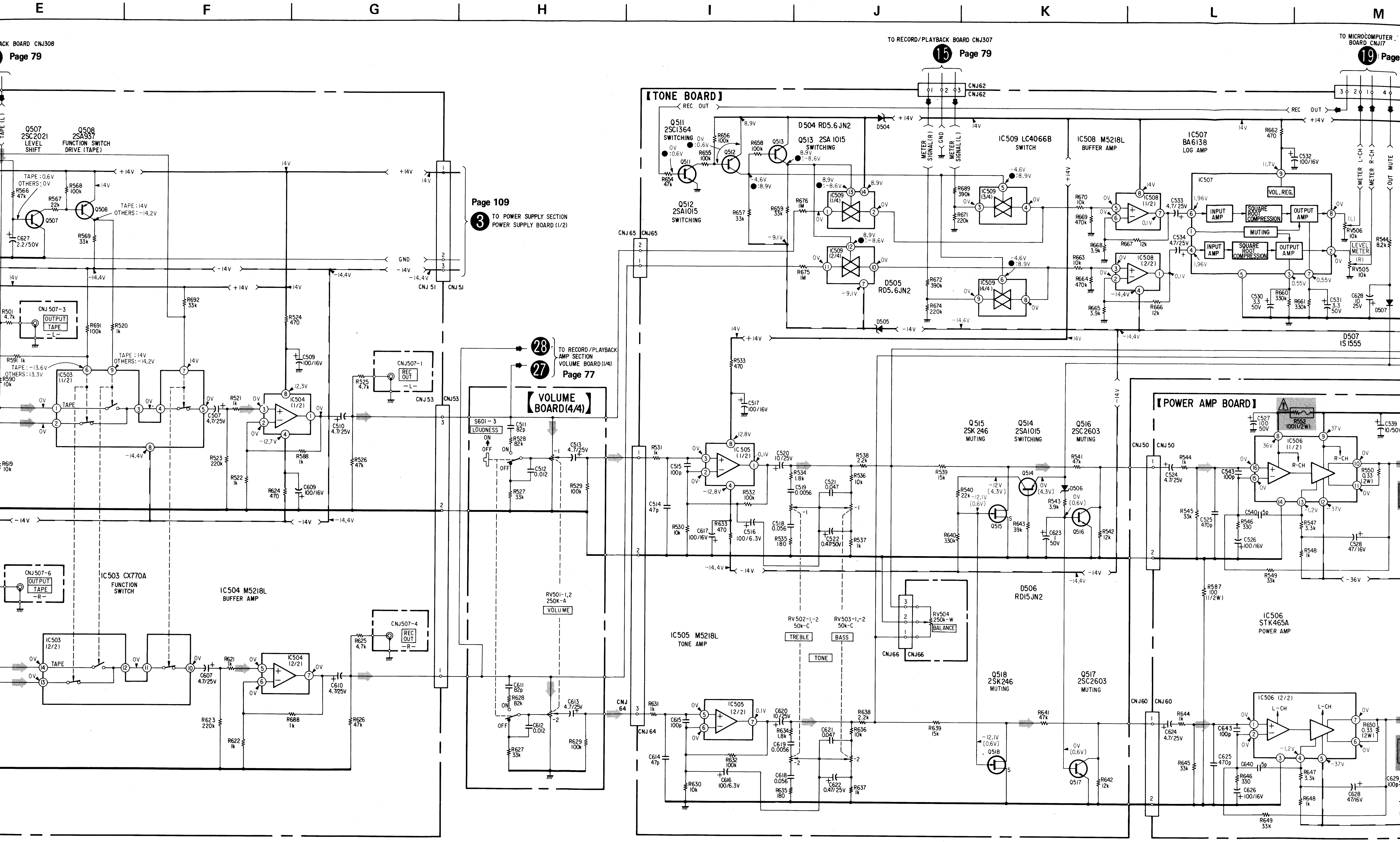

IC502,503 CX 770A

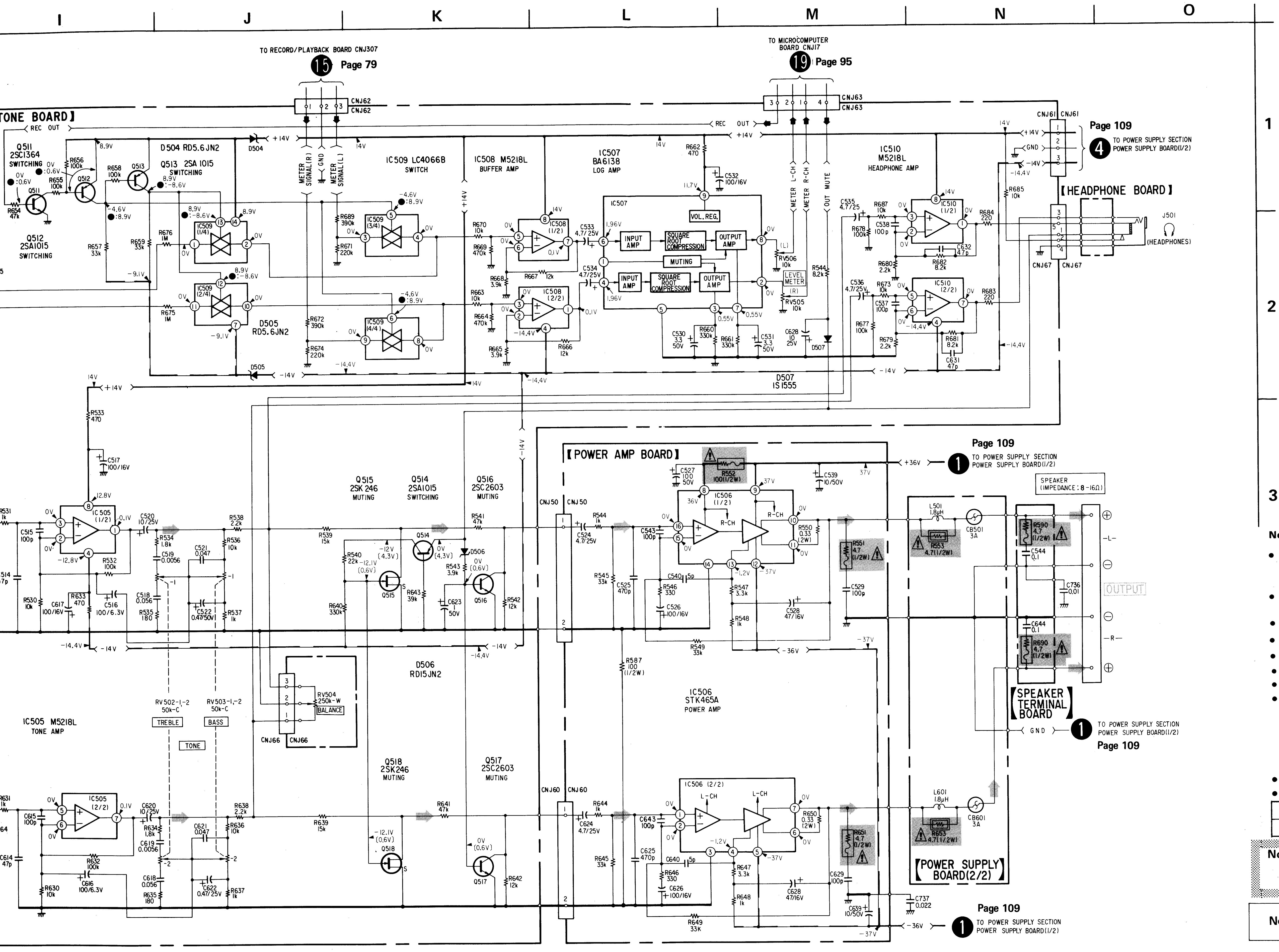

IC507 BA6138
VOL. REG.
OUTPUT AMP
SQUARE ROOT COMPRESSION
INPUT AMP
INPUT AMP
SQUARE ROOT COMPRESSION
OUTPUT AMP
MUTING


(EXT. GROUND TERMINAL)

4-7. SCHEMATIC DIAGRAM – *FUNCTION SWITCH/POWER AMP SECTION* –


A
B
C
D
E
F
G
H
1
2
3
4
5
TO TUNER SECTION FM BOARD CNJ4
⑪ Page 73
TO MICROCOMPUTER BOARD CNJ26
㉑ Page 94
TO RECORD/PLAYBACK BOARD CNJ308
⑭ Page 79
CNJ52
【FUNCTION BOARD】
TUNER (R)
GND
TUNER (L)
TUNER OUT
PHONO OUT
AUX OUT
TAPE OUT
FUNCTION MUTE OUT
TAPE (R)
GND
TAPE (L)
Q501 2SC2021 LEVEL SHIFT
Q502 2SA937 FUNCTION SWITCH DRIVE (TUNER)
Q503 2SC2021 LEVEL SHIFT
Q504 2SA937 FUNCTION SWITCH DRIVE (PHONO)
Q505 2SC2021 LEVEL SHIFT
Q506 2SA937 FUNCTION SWITCH DRIVE (AUX)
Q507 2SC2021 LEVEL SHIFT
Q508 2SA937 FUNCTION SWITCH DRIVE (TAPE)
TUNER: 0.6V OTHERS: 0V
PHONO: 0.6V OTHERS: 0V
AUX: 0.6V OTHERS: 0V
TAPE: 0.6V OTHERS: 0V
TUNER: 14V OTHERS: -14.2V
PHONO: 14V OTHERS: -14.2V
AUX: 14V OTHERS: -14.2V
TAPE: 14V OTHERS: -14.2V
TAPE: -13.6V OTHERS: 13.3V
+14V
-14V
-14.4V
14V
GND
Page 109
③ TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)
CNJ51
D501~503 1S1555
D501
D502
D503
CNJ507-2 OUTPUT TUNER -L-
CNJ507-3 OUTPUT TAPE -L-
CNJ507-1 REC OUT -L-
CNJ507-5 OUTPUT TUNER -R-
CNJ507-6 OUTPUT TAPE -R-
CNJ507-4 REC OUT -R-
㉘ ㉗ TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD (1/4)
Page 77
【VOLUME BOARD (4/4)】
CNJ53
S601-3 LOUDNESS ON OFF
RV501-1,2 250K-A VOLUME
-L-CH-
-R-CH-
CNJ506-1 PHONO -L-
CNJ506-2 AUX -L-
CNJ506-3 PHONO -R-
CNJ506-4 AUX -R-
INPUT
IC501 (1/2)
IC501 (2/2)
IC502 (1/2)
IC502 (2/2)
IC503 (1/2)
IC503 (2/2)
IC504 (1/2)
IC504 (2/2)
TUNER
PHONO
AUX
TAPE
IC501 M5218L RIAA EQUALIZER
IC502 CX770A FUNCTION SWITCH
IC503 CX770A FUNCTION SWITCH
IC504 M5218L BUFFER AMP
12.6V
1.8V
-13.2V
1.45V
12.3V
-12.7V
CNJ 64


E
F
G
H
I
J
K
L
M
ACK BOARD CNJ308
Page 79
TO RECORD/PLAYBACK BOARD CNJ307
15 Page 79
TO MICROCOMPUTER BOARD CNJ17
19 Page
Q507 2SC2021 LEVEL SHIFT
Q508 2SA937 FUNCTION SWITCH DRIVE (TAPE)
TAPE : 0.6V OTHERS : 0V
TAPE : 14V OTHERS : -14.2V
R566 47k
R567 22k
R568 100k
R569 33k
C627 2.2/50V
Page 109
3 TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)
+14V
GND
-14V
CNJ 51
CNJ507-3 OUTPUT TAPE -L-
R501 4.7k
R691 100k
R520 1k
R692 33k
R524 470
C509 100/16V
CNJ507-1 REC OUT -L-
R525 4.7k
CNJ 53
IC503 (1/2)
TAPE
IC504 (1/2)
R521 1k
C507 4.7/25V
C510 4.7/25V
R523 220k
R522 1k
R588 1k
R624 470
C609 100/16V
R526 47k
R619 10k
28 TO RECORD/PLAYBACK AMP SECTION
27 VOLUME BOARD (1/4)
Page 77
VOLUME BOARD(4/4)
S601-3 LOUDNESS
C511 82p
R528 82k
C512 0.012
R527 33k
C513 4.7/25V
R529 100k
RV501-1,2 250K-A VOLUME
CNJ507-6 OUTPUT TAPE -R-
IC503 CX770A FUNCTION SWITCH
IC504 M5218L BUFFER AMP
CNJ507-4 REC OUT -R-
R625 4.7k
IC503 (2/2)
IC504 (2/2)
R621 1k
C607 4.7/25V
C610 4.7/25V
R623 220k
R622 1k
R688 1k
R626 47k
C611 82p
R628 82k
C612 0.012
R627 33k
C613 4.7/25V
R629 100k
TONE BOARD
REC OUT
Q511 2SC1364 SWITCHING
Q512 2SA1015 SWITCHING
Q513 2SA1015 SWITCHING
D504 RD5.6JN2
D505 RD5.6JN2
R654 47k
R655 100k
R656 100k
R657 33k
R658 100k
R659 33k
R676 1M
R675 1M
IC509 LC4066B SWITCH
IC508 M5218L BUFFER AMP
IC507 BA6138 LOG AMP
METER SIGNAL(R)
GND
METER SIGNAL(L)
CNJ62
R689 390k
R671 220k
R672 390k
R674 220k
R670 10k
R669 470k
R668 3.9k
R667 12k
R663 10k
R664 470k
R665 3.9k
R666 12k
C533 4.7/25V
C534 4.7/25V
INPUT AMP
SQUARE ROOT COMPRESSION
OUTPUT AMP
VOL.REG.
MUTING
R662 470
C532 100/16V
C530 3.3 50V
R660 330k
R661 330k
C531 3.3 50V
RV506 10k
RV505 10k
LEVEL METER (R)
R544 8.2k
C628 10 25V
D507
D507 IS1555
METER L-CH
METER R-CH
OUT MUTE
CNJ 65
R533 470
C517 100/16V
R531 1k
C515 100p
IC505 (1/2)
R532 100k
C520 10/25V
R534 1.8k
C519 0.0056
C521 0.047
R538 2.2k
R536 10k
C514 47p
R530 10k
C617 100/16V
R633 470
C516 100/6.3V
C518 0.056
R535 180
C522 0.47/50V
R537 1k
Q515 2SK246 MUTING
Q514 2SA1015 SWITCHING
Q516 2SC2603 MUTING
R539 15k
R540 22k
R640 330k
R643 39k
R541 47k
R543 3.9k
C623 50V
D506
R542 12k
D506 RD15JN2
RV502-1,-2 50k-C TREBLE
RV503-1,-2 50k-C BASS
TONE
RV504 250k-W BALANCE
CNJ66
IC505 M5218L TONE AMP
Q518 2SK246 MUTING
Q517 2SC2603 MUTING
CNJ 64
R631 1k
C615 100p
IC505 (2/2)
R632 100k
C620 10/25V
R634 1.8k
C619 0.0056
C621 0.047
R638 2.2k
R636 10k
C614 47p
R630 10k
C616 100/6.3V
C618 0.056
R635 180
C622 0.47/25V
R637 1k
R639 15k
R641 47k
R642 12k
POWER AMP BOARD
C527 100 50V
R552 100(1/2W)
C539 10/50V
IC506 (1/2)
R-CH
CNJ 50
R544 1k
C524 4.7/25V
C543 100p
R550 0.33 (2W)
R545 33k
C525 470p
C540 5p
R546 330
C526 100/16V
R547 3.3k
R548 1k
C528 47/16V
R549 33k
-36V
R587 100 (1/2W)
IC506 STK465A POWER AMP
CNJ 60
IC506 (2/2)
L-CH
R644 1k
C624 4.7/25V
C643 100p
R650 0.33 (2W)
R645 33k
C625 470p
C640 5p
R646 330
C626 100/16V
R647 3.3k
R648 1k
C628 47/16V
R649 33K
C629 100p


I
J
K
L
M
N
O
1
2
3
TO RECORD/PLAYBACK BOARD CNJ307
⑮ Page 79
TO MICROCOMPUTER BOARD CNJ17
⑲ Page 95
CNJ62
CNJ63
CNJ61
Page 109
④ TO POWER SUPPLY SECTION POWER SUPPLY BOARD(1/2)
TONE BOARD】
REC OUT
+14V
GND
-14V
Q511 2SC1364 SWITCHING
Q512 2SA1015 SWITCHING
Q513 2SA1015 SWITCHING
D504 RD5.6JN2
D505 RD5.6JN2
IC509 LC4066B SWITCH
IC508 M5218L BUFFER AMP
IC507 BA6138 LOG AMP
IC510 M5218L HEADPHONE AMP
METER SIGNAL(R)
METER SIGNAL(L)
METER L-CH
METER R-CH
OUT MUTE
INPUT AMP
SQUARE ROOT COMPRESSION
OUTPUT AMP
MUTING
VOL. REG.
LEVEL METER
RV506 10k
RV505 10k
D507 IS1555
【HEADPHONE BOARD】
J501 (HEADPHONES)
CNJ67
【POWER AMP BOARD】
Q515 2SK246 MUTING
Q514 2SA1015 SWITCHING
Q516 2SC2603 MUTING
Q518 2SK246 MUTING
Q517 2SC2603 MUTING
D506 RD15JN2
IC505 M5218L TONE AMP
RV502-1,-2 50k-C TREBLE
RV503-1,-2 50k-C BASS
TONE
RV504 250k-W BALANCE
CNJ66
CNJ50
CNJ60
IC506 STK465A POWER AMP
IC506 (1/2) R-CH
IC506 (2/2) L-CH
R552 100(1/2W)
R587 100 (1/2W)
Page 109
① TO POWER SUPPLY SECTION POWER SUPPLY BOARD(1/2)
+36V
-36V
-37V
SPEAKER (IMPEDANCE : 8-16Ω)
L501 1.8μH
L601 1.8μH
CB501 3A
CB601 3A
R553 4.7(1/2W)
R653 4.7(1/2W)
R551 4.7 (1/2W)
R651 4.7 (1/2W)
R590 4.7 (1/2W)
R690 4.7 (1/2W)
OUTPUT
-L-
-R-
【SPEAKER TERMINAL BOARD】
【POWER SUPPLY BOARD(2/2)】
GND
① TO POWER SUPPLY SECTION POWER SUPPLY BOARD(1/2) Page 109

Note:

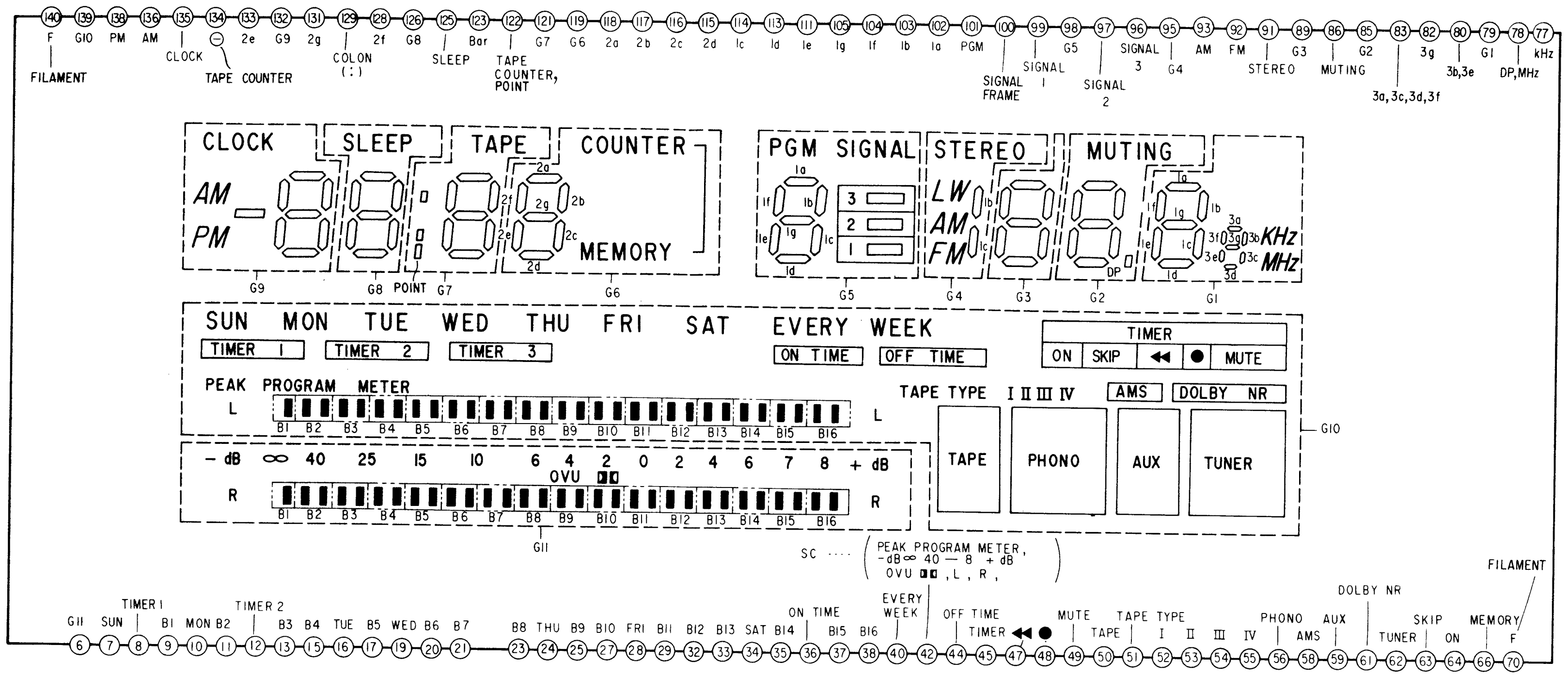
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- : nonflammable resistor.
- : fusible resistor.
- ☐ : panel designation.
- ——: B+ bus.
- – – –: B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  [ ] : When the headphones are inserted to the head-phone jack.
  ● : REC mode
- : signal path
- Switch

Ref. No.	Switch	Position
S601-3	LOUDNESS	OFF

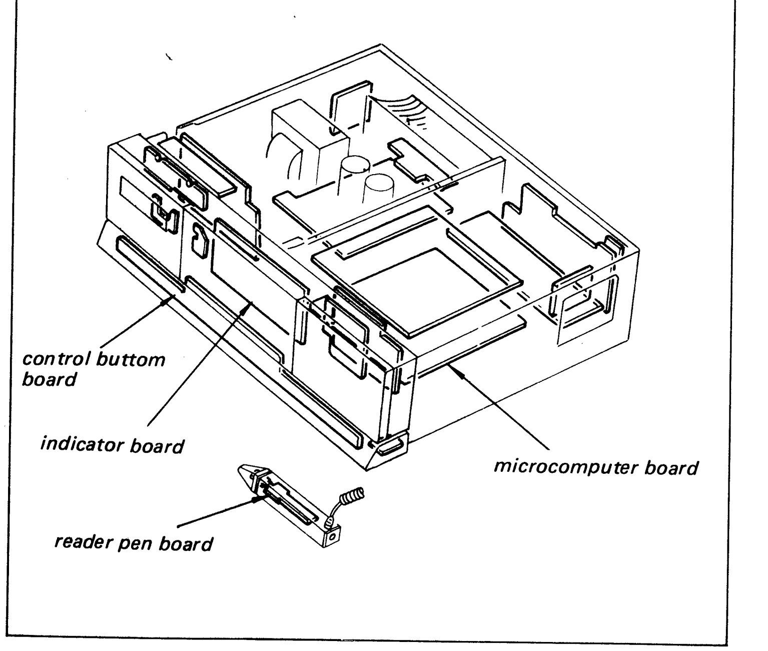
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Voltages are measured with a VOM (50kΩ/V).

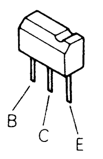
4-8. MOUNTING DIAGRAM – *MICROCOMPUTER/INDICATOR SECTION* –


FILAMENT
CLOCK
TAPE COUNTER
COLON (:)
SLEEP
TAPE COUNTER, POINT
SIGNAL FRAME
SIGNAL 1
SIGNAL 2
SIGNAL 3
AM
FM
STEREO
MUTING
DP,MHz
kHz
CLOCK
SLEEP
TAPE
COUNTER
MEMORY
AM
PM
POINT
PGM
SIGNAL
STEREO
MUTING
LW
AM
FM
KHz
MHz
G1
G2
G3
G4
G5
G6
G7
G8
G9
G10
G11
SUN MON TUE WED THU FRI SAT EVERY WEEK
TIMER 1
TIMER 2
TIMER 3
ON TIME
OFF TIME
TIMER
ON
SKIP
MUTE
PEAK PROGRAM METER
L
R
B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16
TAPE TYPE I II III IV
AMS
DOLBY NR
TAPE
PHONO
AUX
TUNER
- dB ∞ 40 25 15 10 6 4 2 0 2 4 6 7 8 + dB
OVU
SC ···· (PEAK PROGRAM METER, -dB ∞ 40 — 8 + dB OVU, L, R)
TIMER 1
TIMER 2
EVERY WEEK
ON TIME
OFF TIME
MUTE
TAPE TYPE
DOLBY NR
PHONO
AUX
AMS
SKIP
TUNER
MEMORY
FILAMENT

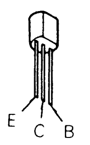
CIRCUIT BOARD LOCATION


control buttom board
indicator board
microcomputer board
reader pen board

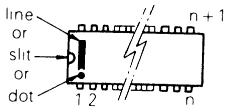
2SA937
2SC2021



2SA1015
2SC1364

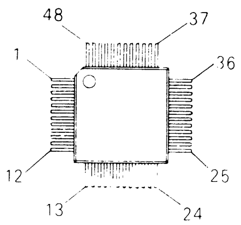


LB1290
LC4066B
MB88401-10
MSL912RS
MSL9359RS
MSL9512RS
MSL9513RS
TC4001BP
TC4049BP
TC4050BP
TC4069UBP

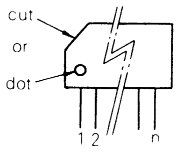

line or slit or dot
1 2
n+1
n

(Top view)

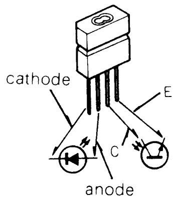
MB8847-624


48
37
1
36
12
25
13
24

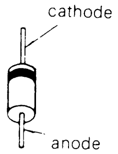
NJM4558S


cut or dot
1 2
n

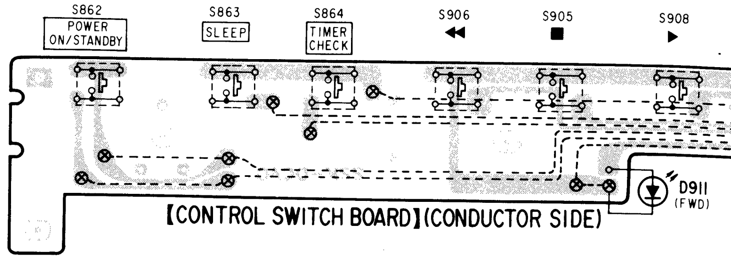
NJL5143EL

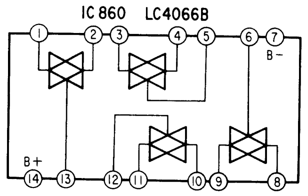

cathode
E
C
anode

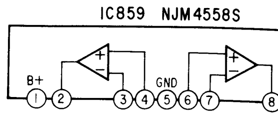
10E2
11DQ03
1S1555
1SS119
HP80
HZ2BLL
HZ4ALL

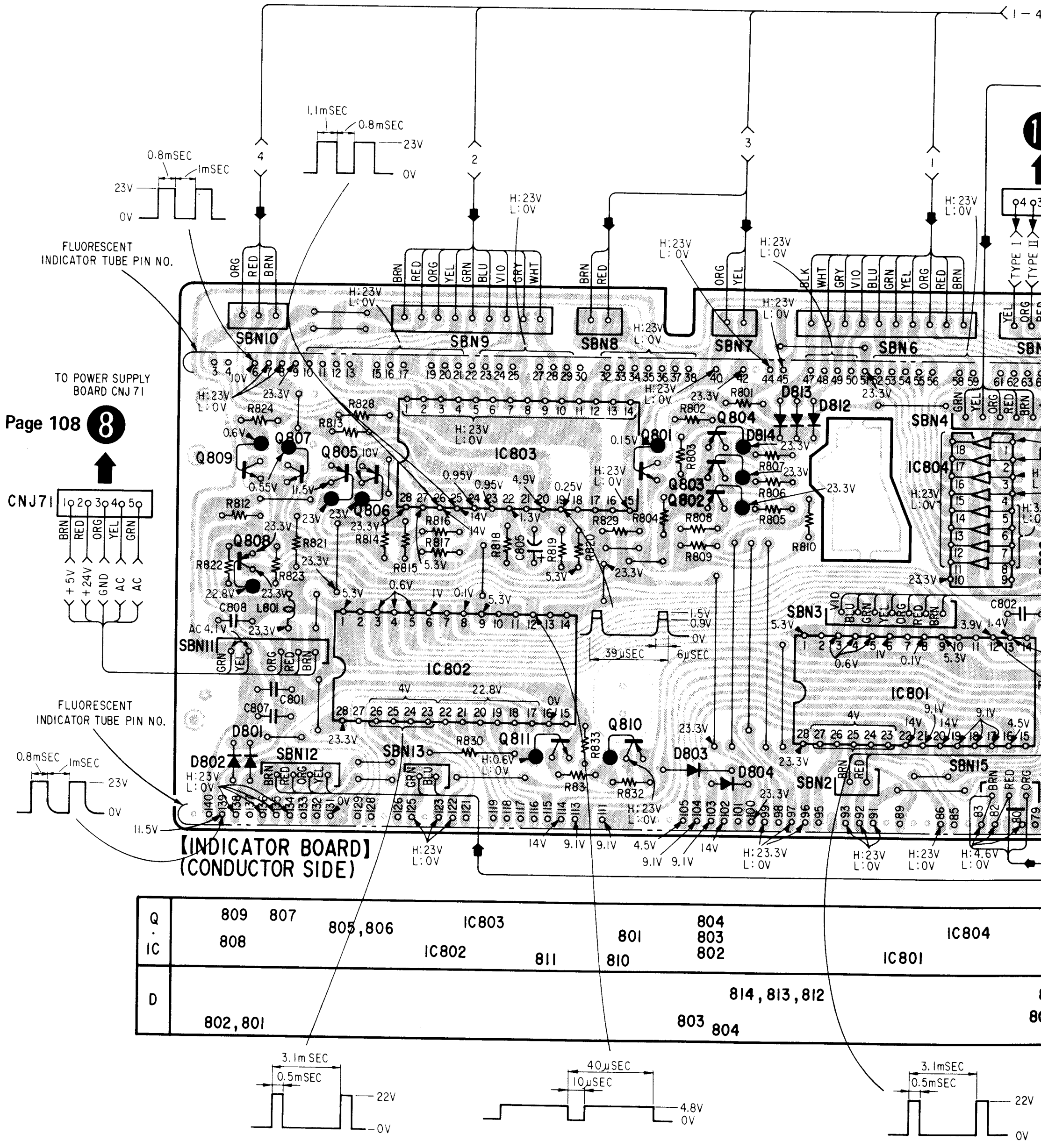

cathode
anode

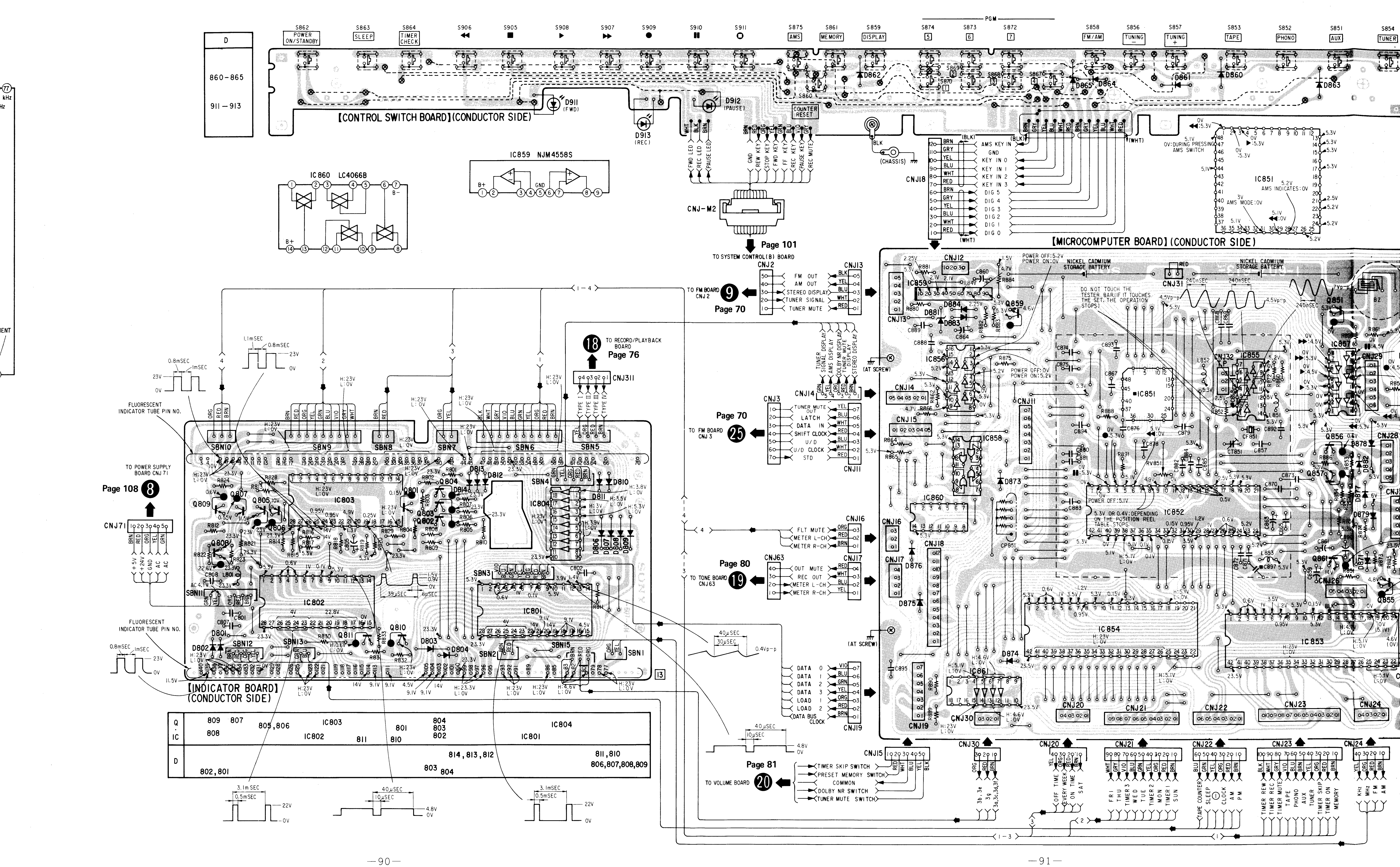
D
860–865
911–913

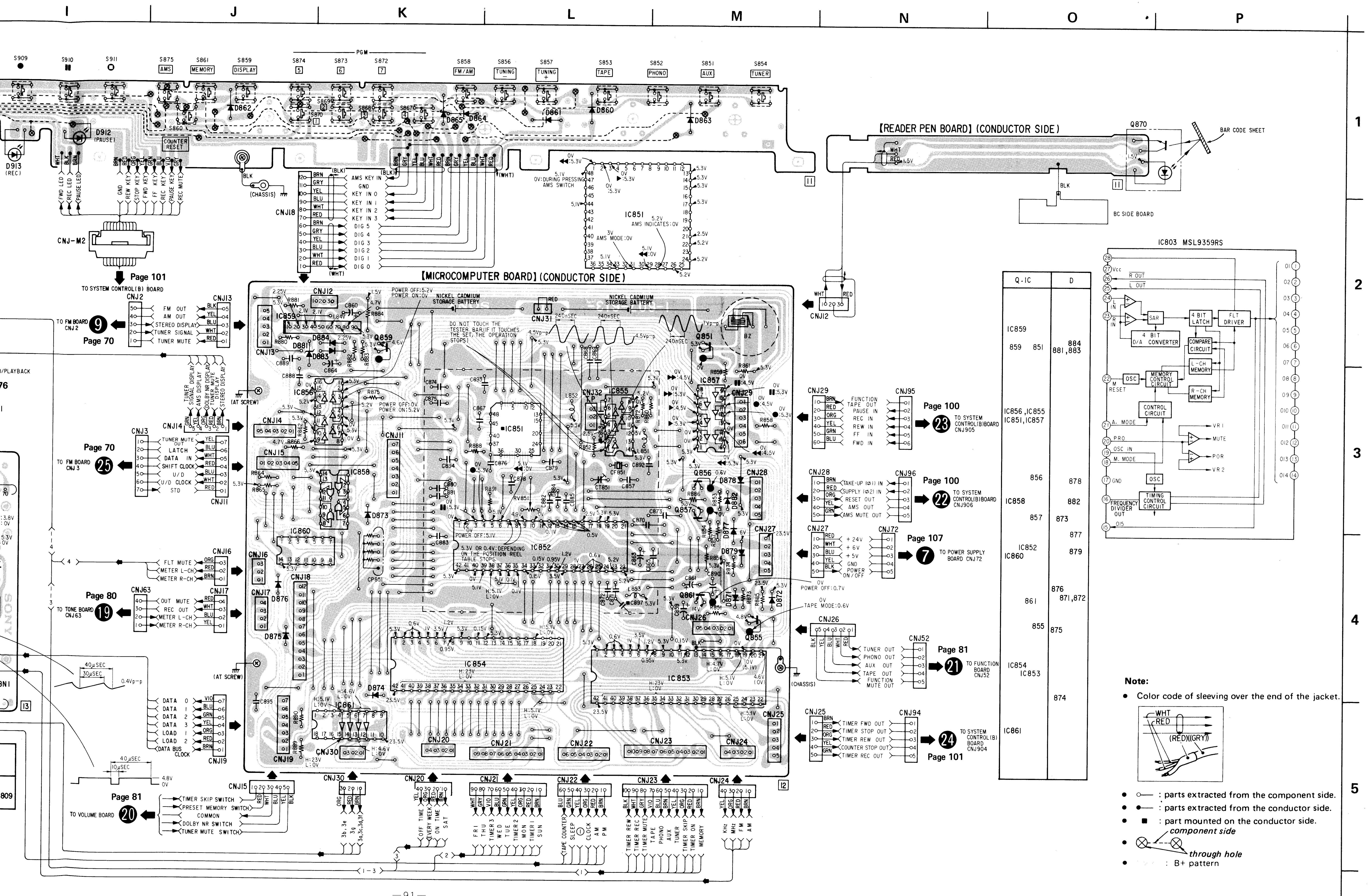

S862 POWER ON/STANDBY
S863 SLEEP
S864 TIMER CHECK
S906
S905
S908
D911 (FWD)
[CONTROL SWITCH BOARD] (CONDUCTOR SIDE)


IC860 LC4066B
B-
B+


IC859 NJM4558S
B+
GND


FLUORESCENT INDICATOR TUBE PIN NO.
TO POWER SUPPLY BOARD CNJ71
Page 108 ⑧
CNJ71
SBN10
SBN9
SBN8
SBN7
SBN6
SBN4
SBN3
SBN11
SBN12
SBN13
SBN2
SBN15
IC803
IC802
IC801
IC804
Q809
Q807
Q805
Q806
Q808
Q801
Q804
Q803
Q802
Q810
Q811
D801
D802
D803
D804
D812
D813
D814
[INDICATOR BOARD] (CONDUCTOR SIDE)
Q · IC
D
809 807 808
805,806
IC803
IC802
811
801
810
804 803 802
IC804
IC801
802,801
803 804
814,813,812
0.8mSEC
1mSEC
1.1mSEC
3.1mSEC
0.5mSEC
40μSEC
10μSEC
3.1mSEC
0.5mSEC
23V
22V
4.8V
0V


D
860-865
911-913
S862 POWER ON/STANDBY
S863 SLEEP
S864 TIMER CHECK
S906
S905
S908
S907
S909
S910
S911
S875 AMS
S861 MEMORY
S859 DISPLAY
PGM
S874 5
S873 6
S872 7
S858 FM/AM
S856 TUNING −
S857 TUNING +
S853 TAPE
S852 PHONO
S851 AUX
S854 TUNER
D911 (FWD)
D912 (PAUSE)
D913 (REC)
COUNTER RESET
D862
D865
D864
D861
D860
D863
【CONTROL SWITCH BOARD】(CONDUCTOR SIDE)
IC860 LC4066B
IC859 NJM4558S
FWD LED
REC LED
PAUSE LED
GND
REW KEY
STOP KEY
FWD KEY
FF
REC KEY
PAUSE KEY
REC MUTE
CNJ-M2
Page 101
TO SYSTEM CONTROL(B) BOARD
CHASSIS
CNJ18
AMS KEY IN
GND
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
DIG 5
DIG 4
DIG 3
DIG 2
DIG 1
DIG 0
IC851
【MICROCOMPUTER BOARD】(CONDUCTOR SIDE)
TO FM BOARD CNJ 2
Page 70
CNJ2
FM OUT
AM OUT
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE
CNJ13
TO RECORD/PLAYBACK BOARD
Page 76
CNJ311
TYPE I
TYPE II
TYPE III
TYPE IV
CNJ3
TUNER MUTE OUT
LATCH
DATA IN
SHIFT CLOCK
U/D
U/D CLOCK
STD
TO FM BOARD CNJ 3
CNJ11
CNJ14
TUNER SIGNAL DISPLAY
AMS DISPLAY
DOLBY NR DISPLAY
TUNER MUTE DISPLAY
STEREO DISPLAY
(AT SCREW)
FLT MUTE
METER L-CH
METER R-CH
CNJ16
Page 80
TO TONE BOARD CNJ63
CNJ63
OUT MUTE
REC OUT
CNJ17
DATA 0
DATA 1
DATA 2
DATA 3
LOAD 1
LOAD 2
DATA BUS CLOCK
CNJ19
Page 81
TO VOLUME BOARD
CNJ15
TIMER SKIP SWITCH
PRESET MEMORY SWITCH
COMMON
DOLBY NR SWITCH
TUNER MUTE SWITCH
CNJ30
CNJ20
CNJ21
CNJ22
CNJ23
CNJ24
OFF TIME
EVERY WEEK
ON TIME
SAT
FRI
THU
TIMER 3
WED
TUE
TIMER 2
MON
TIMER 1
SUN
TAPE COUNTER
SLEEP
CLOCK
AM
PM
TIMER REW
TIMER REC
TIMER MUTE
TAPE
PHONO
AUX
TUNER
TIMER SKIP
TIMER ON
MEMORY
KHz
MHz
FM
AM
NICKEL CADMIUM STORAGE BATTERY
DO NOT TOUCH THE TESTER BAR.IF IT TOUCHES THE SET, THE OPERATION STOPS.
POWER OFF:5.2V
POWER ON:0V
IC852
IC853
IC854
IC855
IC856
IC857
IC858
IC860
IC861
CNJ12
CNJ31
CNJ32
CNJ26
CNJ28
CNJ29
BZ
Page 108
TO POWER SUPPLY BOARD CNJ71
CNJ71
+5V
+24V
GND
AC
AC
FLUORESCENT INDICATOR TUBE PIN NO.
SBN10
SBN9
SBN8
SBN7
SBN6
SBN5
SBN4
SBN3
SBN2
SBN1
SBN11
SBN12
SBN13
SBN15
IC803
IC802
IC801
IC804
【INDICATOR BOARD】(CONDUCTOR SIDE)
Q
IC
D
809 807
808
805,806
IC803
IC802
811
801
810
804
803
802
IC804
IC801
802,801
803 804
814,813,812
811,810
806,807,808,809
1.1mSEC
0.8mSEC
1mSEC
23V
0V
39μSEC
6μSEC
40μSEC
30μSEC
0.4Vp-p
10μSEC
4.8V
3.1mSEC
0.5mSEC
22V
3.1mSEC
0.5mSEC
1-4
1-3


I
J
K
L
M
N
O
P
1
2
3
4
5
S909
S910
S911
S875 AMS
S861 MEMORY
S859 DISPLAY
PGM
S874 5
S873 6
S872 7
S858 FM/AM
S856 TUNING −
S857 TUNING +
S853 TAPE
S852 PHONO
S851 AUX
S854 TUNER
D862
D861
D860
D863
D864
D865
S860
S869
S870
S868
S867
D912 (PAUSE)
D913 (REC)
COUNTER RESET
(CHASSIS)
FWD LED
REC LED
PAUSE LED
GND
REW KEY
STOP KEY
FWD KEY
FF KEY
REC KEY
PAUSE KEY
REC MUTE
CNJ-M2
Page 101
TO SYSTEM CONTROL(B) BOARD
CNJ18
AMS KEY IN
GND
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
DIG 5
DIG 4
DIG 3
DIG 2
DIG 1
DIG 0
IC851
0V:DURING PRESSING AMS SWITCH
AMS INDICATES:0V
AMS MODE:0V
[READER PEN BOARD] (CONDUCTOR SIDE)
Q870
BAR CODE SHEET
BC SIDE BOARD
CNJ12
[MICROCOMPUTER BOARD] (CONDUCTOR SIDE)
POWER OFF:5.2V
POWER ON:0V
NICKEL CADMIUM STORAGE BATTERY
CNJ31
BZ
DO NOT TOUCH THE TESTER BAR.IF IT TOUCHES THE SET, THE OPERATION STOPS!
240nSEC
4.5Vp-p
7Vp-p
IC859
IC856
IC855
IC857
IC858
IC860
IC852
IC854
IC853
IC861
Q859
Q851
Q856
Q857
Q861
Q855
CNJ13
CNJ14
CNJ15
CNJ16
CNJ17
CNJ19
CNJ20
CNJ21
CNJ22
CNJ23
CNJ24
CNJ25
CNJ26
CNJ27
CNJ28
CNJ29
CNJ30
CNJ32
CNJ11
CNJ2
TO FM BOARD CNJ2
9
Page 70
FM OUT
AM OUT
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE
CNJ3
TO FM BOARD CNJ3
25
TUNER MUTE OUT
LATCH
DATA IN
SHIFT CLOCK
U/D
U/D CLOCK
STD
FLT MUTE
METER L-CH
METER R-CH
CNJ63
Page 80
TO TONE BOARD CNJ63
19
OUT MUTE
REC OUT
METER L-CH
METER R-CH
40μSEC
30μSEC
0.4Vp-p
DATA 0
DATA 1
DATA 2
DATA 3
LOAD
LOAD
DATA BUS CLOCK
CNJ15
Page 81
TO VOLUME BOARD
20
TIMER SKIP SWITCH
PRESET MEMORY SWITCH
COMMON
DOLBY NR SWITCH
TUNER MUTE SWITCH
OFF TIME
EVERY WEEK
ON TIME
SAT
FRI
THU
TIMER 3
WED
TUE
TIMER 2
MON
TIMER 1
SUN
TAPE COUNTER
SLEEP
CLOCK
AM
PM
TIMER REW
TIMER REC
TIMER MUTE
TAPE
PHONO
AUX
TUNER
TIMER SKIP
TIMER ON
MEMORY
KHz
MHz
FM
AM
POWER OFF:5.1V
5.3V OR 0.4V:DEPENDING ON THE POSITION REEL TABLE STOPS
POWER OFF:0V
POWER ON:5.2V
POWER OFF:0.7V
TAPE MODE:0.6V
(AT SCREW)
(CHASSIS)
CNJ95
Page 100
TO SYSTEM CONTROL(B)BOARD CNJ905
23
FUNCTION
TAPE OUT
PAUSE IN
REC IN
REW IN
FF IN
FWD IN
CNJ96
TO SYSTEM CONTROL(B)BOARD CNJ906
22
TAKE-UP (Ø1) IN
SUPPLY (Ø2) IN
RESET OUT
AMS OUT
AMS MUTE OUT
CNJ72
Page 107
TO POWER SUPPLY BOARD CNJ72
7
+24V
+6V
+5V
GND
POWER ON/OFF
CNJ52
Page 81
TO FUNCTION BOARD CNJ52
21
TUNER OUT
PHONO OUT
AUX OUT
TAPE OUT
FUNCTION MUTE OUT
CNJ94
TO SYSTEM CONTROL(B) BOARD CNJ904
24
Page 101
TIMER FWD OUT
TIMER STOP OUT
TIMER REW OUT
COUNTER STOP OUT
TIMER REC OUT
IC803 MSL9359RS
Vcc
R OUT
L OUT
L IN
R IN
SAR
4 BIT D/A CONVERTER
4 BIT LATCH
FLT DRIVER
COMPARE CIRCUIT
L-CH MEMORY
R-CH MEMORY
M RESET
OSC
MEMORY CONTROL CIRCUIT
CONTROL CIRCUIT
A. MODE
PRO
OSC IN
M. MODE
GND
FREQUENCY DIVIDER OUT
TIMING CONTROL CIRCUIT
VR1
MUTE
POR
VR2
O15
O1
O2
O3
O4
O5
O6
O7
O8
O9
O10
O11
O12
O13
O14
SONY

Q·IC	D
IC859	
859 851	884 881,883
IC856 ,IC855 IC851,IC857	
856	878
IC858	882
857	873
	877
IC852 IC860	879
861	876 871,872
855	875
IC854 IC853	
	874
IC861	

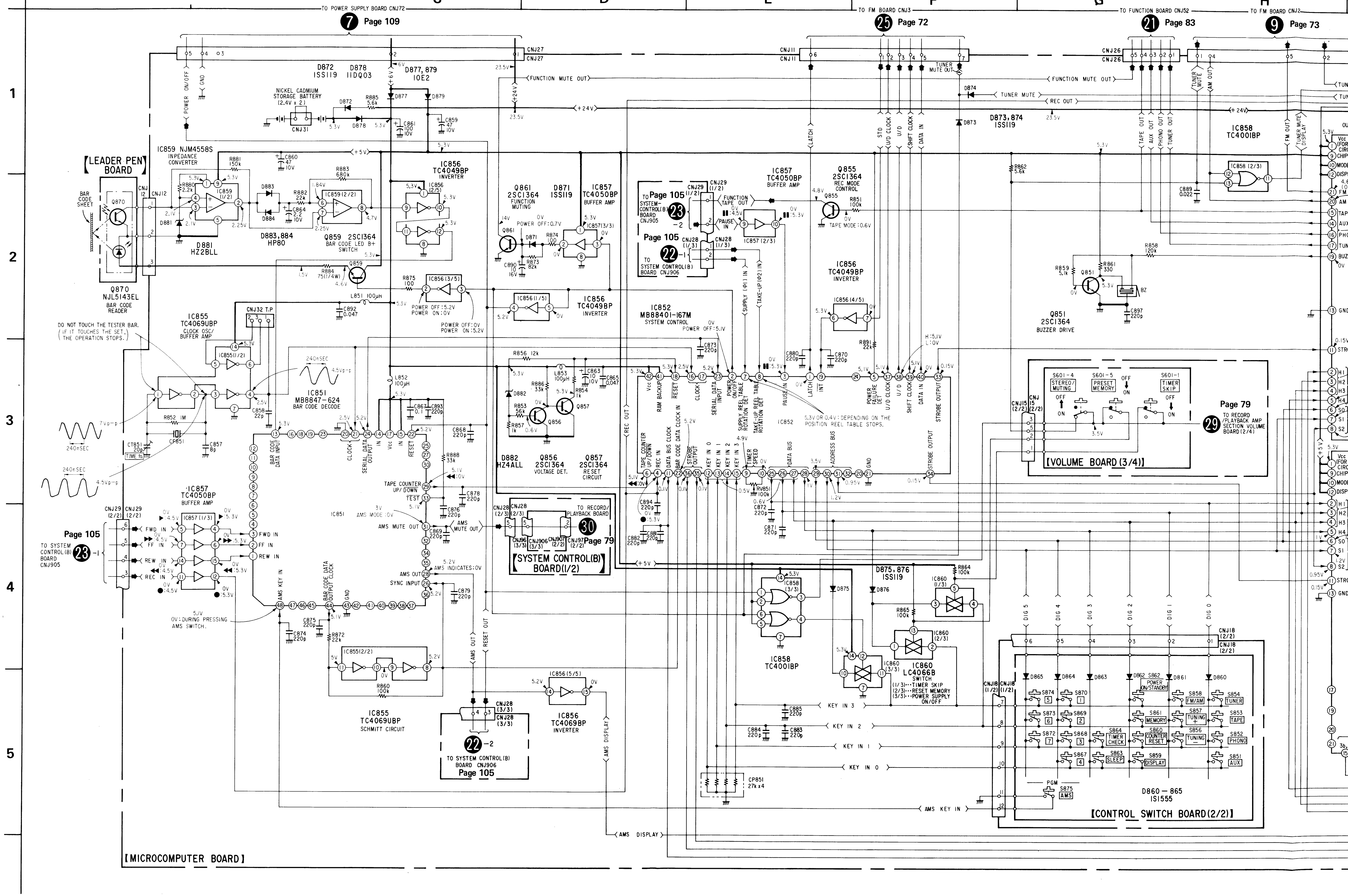
Note:

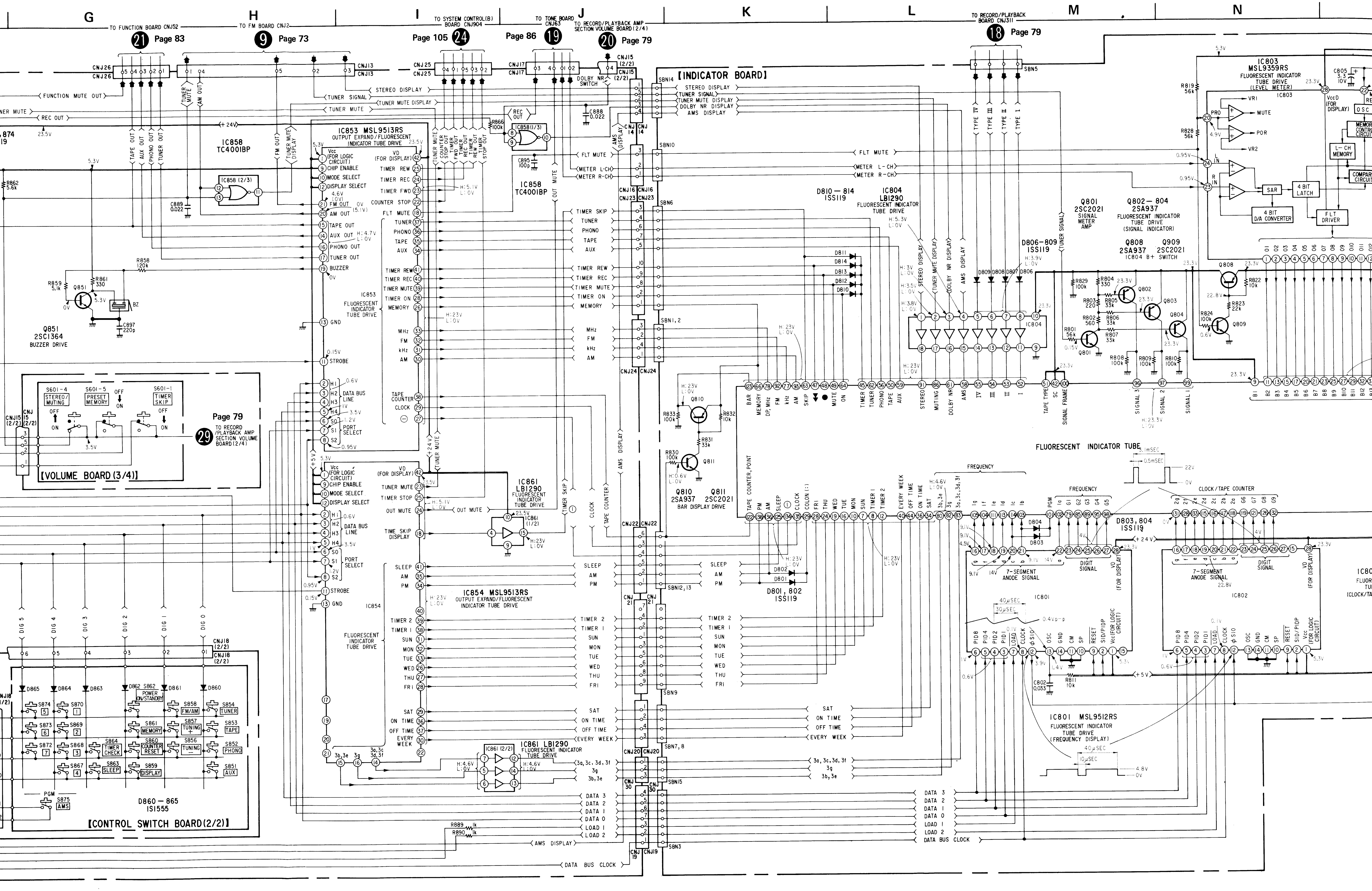
- Color code of sleeving over the end of the jacket.

WHT
RED
(RED)((GRY))

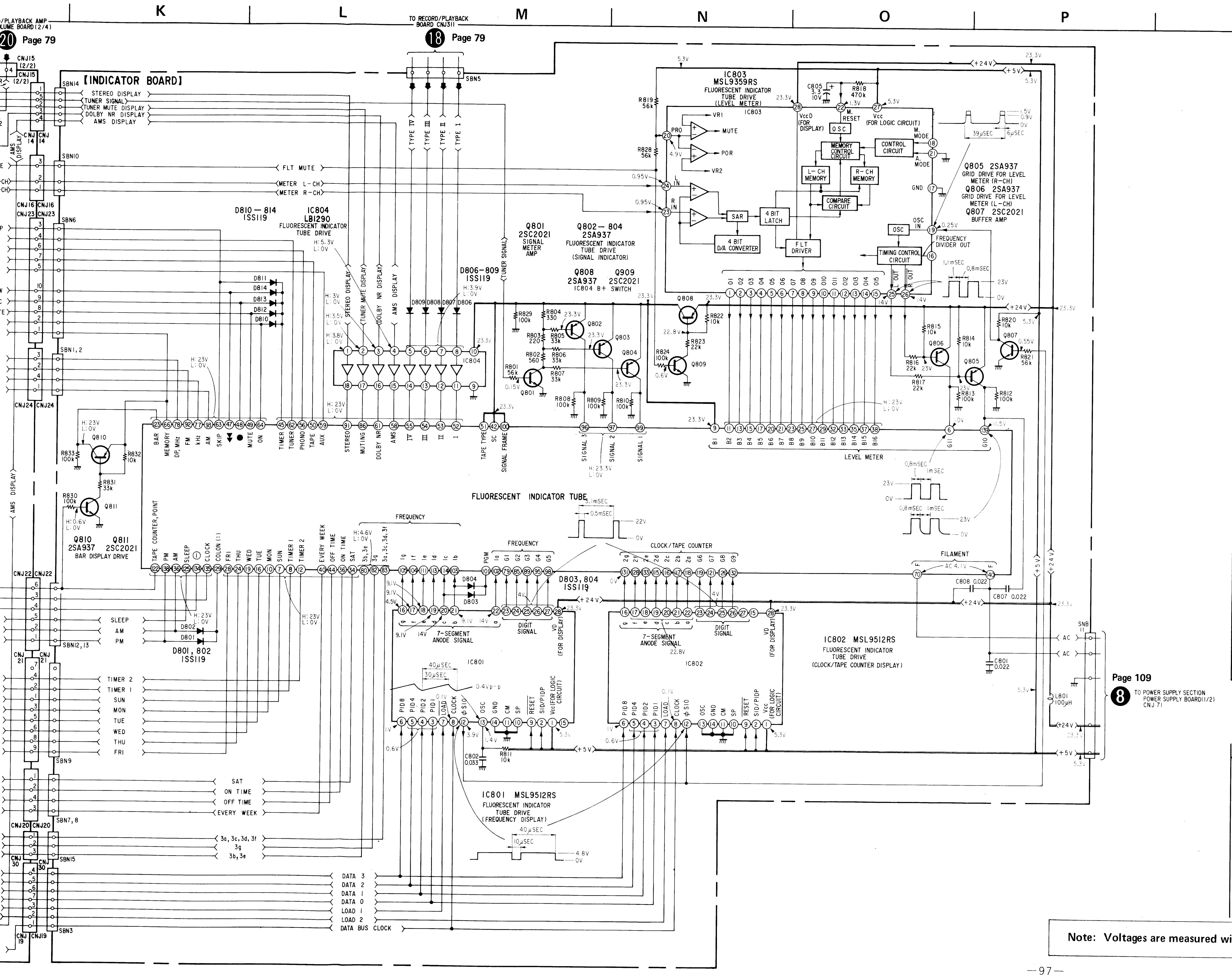
- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- ⊗- - -⊗ *component side* *through hole*
- : B+ pattern

4-9. SCHEMATIC DIAGRAM *– MICROCOMPUTER/INDICATOR SECTION –*


C
D
E
F
G
H
1
2
3
4
5
TO POWER SUPPLY BOARD CNJ72
7 Page 109
TO FM BOARD CNJ3
25 Page 72
TO FUNCTION BOARD CNJ52
21 Page 83
TO FM BOARD CNJ2
9 Page 73
CNJ27
CNJ11
CNJ26
D872 ISS119
D878 11DQ03
D877, 879 10E2
NICKEL CADMIUM STORAGE BATTERY (2.4V x 2)
CNJ31
FUNCTION MUTE OUT
TUNER MUTE
REC OUT
+24V
D873, 874 ISS119
IC858 TC4001BP
[LEADER PEN] BOARD
BAR CODE SHEET
Q870 NJL5143EL BAR CODE READER
IC859 NJM4558S INPEDANCE CONVERTER
D883, 884 HP80
Q859 2SC1364 BAR CODE LED B+ SWITCH
D881 HZ2BLL
IC856 TC4049BP INVERTER
Q861 2SC1364 FUNCTION MUTING
D871 ISS119
IC857 TC4050BP BUFFER AMP
Q855 2SC1364 REC MODE CONTROL
To Page 105 23 -2 SYSTEM-CONTROL(B) BOARD CNJ905
Page 105 22 -1 TO SYSTEM CONTROL(B) BOARD CNJ906
IC855 TC4069UBP CLOCK OSC/BUFFER AMP
CNJ32 T.P
DO NOT TOUCH THE TESTER BAR. (IF IT TOUCHES THE SET, THE OPERATION STOPS.)
IC851 MB8847-624 BAR CODE DECODE
IC852 MB88401-167M SYSTEM CONTROL
Q851 2SC1364 BUZZER DRIVE
BZ
D882 HZ4ALL
Q856 2SC1364 VOLTAGE DET.
Q857 2SC1364 RESET CIRCUIT
5.3V OR 0.4V: DEPENDING ON THE POSITION REEL TABLE STOPS.
IC857 TC4050BP BUFFER AMP
Page 105 TO SYSTEM CONTROL(B) BOARD CNJ905 23 -1
FWD IN
FF IN
REW IN
REC IN
TAPE COUNTER UP/DOWN
TEST
AMS MUTE OUT
AMS OUT
SYNC INPUT
AMS INDICATES: 0V
5.1V 0V: DURING PRESSING AMS SWITCH.
TO RECORD/PLAYBACK BOARD 30 Page 79
[SYSTEM CONTROL(B) BOARD(1/2)]
Page 79 29 TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD (2/4)
S601-4 STEREO/MUTING
S601-5 PRESET MEMORY
S601-1 TIMER SKIP
[VOLUME BOARD (3/4)]
IC858 TC4001BP
D875, 876 ISS119
IC860 LC4066B SWITCH (1/3)···TIMER SKIP (2/3)···RESET MEMORY (3/3)···POWER SUPPLY ON/OFF
IC855 TC4069UBP SCHMITT CIRCUIT
IC856 TC4069BP INVERTER
22 -2 TO SYSTEM CONTROL(B) BOARD CNJ906 Page 105
KEY IN 3
KEY IN 2
KEY IN 1
KEY IN 0
AMS KEY IN
AMS DISPLAY
CP851 27k x4
DIG 5
DIG 4
DIG 3
DIG 2
DIG 1
DIG 0
CNJ18 (2/2)
CNJ18 (1/2)
S874 5
S870 1
S873 6
S869 2
S872 7
S868 3
S867 4
S864 TIMER CHECK
S863 SLEEP
S862 POWER ON/STANDBY
S861 MEMORY
S860 COUNTER RESET
S859 DISPLAY
S858 FM/AM
S857 TUNING +
S856 TUNING –
S854 TUNER
S853 TAPE
S852 PHONO
S851 AUX
PGM S875 AMS
D860 – 865 1S1555
[CONTROL SWITCH BOARD(2/2)]
[MICROCOMPUTER BOARD]



G
H
I
J
K
L
M
N
TO FUNCTION BOARD CNJ52
21 Page 83
TO FM BOARD CNJ2
9 Page 73
TO SYSTEM CONTROL(B) BOARD CNJ904
Page 105 24
TO TONE BOARD CNJ63
Page 86 19
TO RECORD/PLAYBACK AMP SECTION VOLUME BOARD (2/4)
20 Page 79
TO RECORD/PLAYBACK BOARD CNJ311
18 Page 79
【INDICATOR BOARD】
IC853 MSL9513RS
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE
IC858 TC4001BP
IC858 (2/3)
IC858 (1/3)
IC854 MSL9513RS
OUTPUT EXPAND/FLUORESCENT INDICATOR TUBE DRIVE
IC861 LB1290
FLUORESCENT INDICATOR TUBE DRIVE
IC861 (1/2)
IC861 (2/2)
Q851
2SC1364
BUZZER DRIVE
BZ
D810 — 814
1SS119
IC804
LB1290
FLUORESCENT INDICATOR TUBE DRIVE
Q801
2SC2021
SIGNAL METER AMP
Q802 — 804
2SA937
FLUORESCENT INDICATOR TUBE DRIVE (SIGNAL INDICATOR)
Q808 2SA937
Q909 2SC2021
IC804 B+ SWITCH
D806 — 809
1SS119
IC803
MSL9359RS
FLUORESCENT INDICATOR TUBE DRIVE (LEVEL METER)
4 BIT D/A CONVERTER
SAR
4 BIT LATCH
L-CH MEMORY
FLT DRIVER
MUTE
POR
Q810 2SA937
Q811 2SC2021
BAR DISPLAY DRIVE
FLUORESCENT INDICATOR TUBE
D801, 802
1SS119
D803, 804
1SS119
IC801 MSL9512RS
FLUORESCENT INDICATOR TUBE DRIVE (FREQUENCY DISPLAY)
IC802
7-SEGMENT ANODE SIGNAL
DIGIT SIGNAL
FREQUENCY
CLOCK/TAPE COUNTER
Page 79
29 TO RECORD /PLAYBACK AMP SECTION VOLUME BOARD (2/4)
【VOLUME BOARD (3/4)】
S601-4 STEREO/MUTING
S601-5 PRESET MEMORY
S601-1 TIMER SKIP
D860 — 865
1S1555
【CONTROL SWITCH BOARD (2/2)】
S875 AMS
S874 5
S870 1
S873 6
S869 2
S872 7
S868 3
S867 4
S864 TIMER CHECK
S863 SLEEP
S862 POWER ON/STANDBY
S861 MEMORY
S860 COUNTER RESET
S859 DISPLAY
S858 FM/AM
S857 TUNING +
S856 TUNING −
S854 TUNER
S853 TAPE
S852 PHONO
S851 AUX
PGM
DIG 5
DIG 4
DIG 3
DIG 2
DIG 1
DIG 0
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE DISPLAY
DOLBY NR DISPLAY
AMS DISPLAY
FLT MUTE
METER L-CH
METER R-CH
TIMER SKIP
TUNER
PHONO
TAPE
AUX
TIMER REW
TIMER REC
TIMER MUTE
TIMER ON
MEMORY
MHz
FM
kHz
AM
SLEEP
PM
TIMER 2
TIMER 1
SUN
MON
TUE
WED
THU
FRI
SAT
ON TIME
OFF TIME
EVERY WEEK
DATA 3
DATA 2
DATA 1
DATA 0
LOAD 1
LOAD 2
DATA BUS CLOCK
FUNCTION MUTE OUT
REC OUT
TUNER MUTE
+24V
TYPE IV
TYPE III
TYPE II
TYPE I


K
L
M
N
O
P
/PLAYBACK AMP
LUME BOARD (2/4)
⑳ Page 79
TO RECORD/PLAYBACK BOARD CNJ311
⑱ Page 79
【INDICATOR BOARD】
STEREO DISPLAY
TUNER SIGNAL
TUNER MUTE DISPLAY
DOLBY NR DISPLAY
AMS DISPLAY
FLT MUTE
METER L-CH
METER R-CH
TYPE IV
TYPE III
TYPE II
TYPE I
IC803
MSL9359RS
FLUORESCENT INDICATOR
TUBE DRIVE
(LEVEL METER)
D810 — 814
1SS119
IC804
LB1290
FLUORESCENT INDICATOR
TUBE DRIVE
Q801
2SC2021
SIGNAL
METER
AMP
Q802— 804
2SA937
FLUORESCENT INDICATOR
TUBE DRIVE
(SIGNAL INDICATOR)
Q808 Q909
2SA937 2SC2021
IC804 B+ SWITCH
D806–809
1SS119
Q805 2SA937
GRID DRIVE FOR LEVEL
METER (R-CH)
Q806 2SA937
GRID DRIVE FOR LEVEL
METER (L-CH)
Q807 2SC2021
BUFFER AMP
SAR
4 BIT LATCH
4 BIT D/A CONVERTER
FLT DRIVER
MEMORY CONTROL CIRCUIT
CONTROL CIRCUIT
L-CH MEMORY
R-CH MEMORY
COMPARE CIRCUIT
TIMING CONTROL CIRCUIT
OSC
FREQUENCY DIVIDER OUT
LEVEL METER
Q810 Q811
2SA937 2SC2021
BAR DISPLAY DRIVE
D801, 802
1SS119
FLUORESCENT INDICATOR TUBE
FREQUENCY
CLOCK/TAPE COUNTER
FILAMENT
D803, 804
1SS119
7-SEGMENT ANODE SIGNAL
DIGIT SIGNAL
IC801
IC802
IC802 MSL9512RS
FLUORESCENT INDICATOR
TUBE DRIVE
(CLOCK/TAPE COUNTER DISPLAY)
IC801 MSL9512RS
FLUORESCENT INDICATOR
TUBE DRIVE
(FREQUENCY DISPLAY)
SLEEP
AM
PM
TIMER 2
TIMER 1
SUN
MON
TUE
WED
THU
FRI
SAT
ON TIME
OFF TIME
EVERY WEEK
DATA 3
DATA 2
DATA 1
DATA 0
LOAD 1
LOAD 2
DATA BUS CLOCK
Page 109
⑧ TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2) CNJ 71
5

Note:

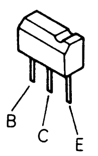
- All capacitors are in μF unless otherwise noted. pF : $\mu\mu$F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ▭ : adjustment for repair.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
  - ● : REC mode
  - ▶ : FWD mode
  - ▶▶ : FF mode
  - ◀◀ : REW mode
  - ❚❚ : PAUSE mode
- Switch

Ref. No.	Switch	Position
S601-1	TIMER SKIP	OFF
S601-4	PRESET MEMORY	OFF
S601-5	STEREO/MUTING	OFF
S851	AUX	OFF
S852	PHONO	OFF
S853	TAPE	OFF
S854	TUNER	OFF
S855	TUNING (–)	OFF
S857	TUNING (+)	OFF
S858	FM/AM	OFF
S859	DISPLAY	OFF
S860	COUNTER RESET	OFF
S861	MEMORY	OFF
S862	POWER ON/STANDBY	OFF
S863	SLEEP	OFF
S864	TIMER CHECK	OFF
S867	4	OFF
S868	3	OFF
S869	2	OFF
S870	1	OFF
S872	7	OFF
S873	6	OFF
S874	5	OFF
S875	AMS	OFF
S905	■ (STOP)	OFF
S906	◀◀ (REW)	OFF
S907	▶▶ (FF)	OFF
S908	▶ (FWD)	OFF
S909	● (REC)	OFF
S910	❚❚ (PAUSE)	OFF
S911	⊖ (REC MUTE)	OFF

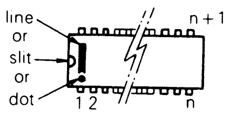
Note: Voltages are measured with a VOM (50kΩ/V).

4-10. MOUNTING DIAGRAM – *SYSTEM CONTROL SECTION* –

2SA881
2SA937
2SC1545
2SC2021
2SC2673

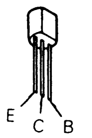


MSM58361RS
TC4081BP

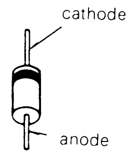


(Top view)

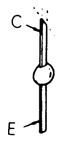
2SD1055



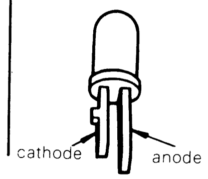
10E2
1S1555
LT8003N



PH102



SLR34DC5
SLR34PC5
SLR34URC5



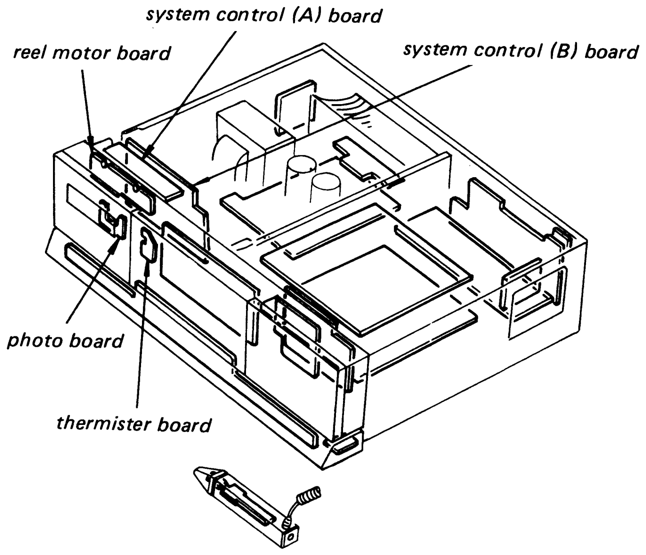
Note:

- ○— : parts extracted from the component side.
- •— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- ⊗- -⊗ *component side* / *through hole*
- : B + pattern

- Voltages are dc with respect to ground unless otherwise noted.

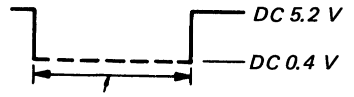
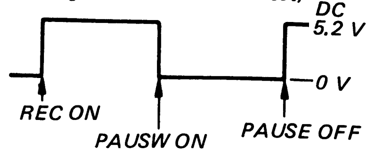
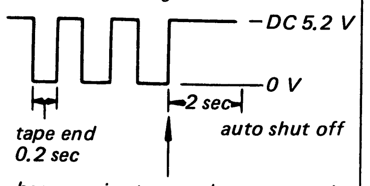
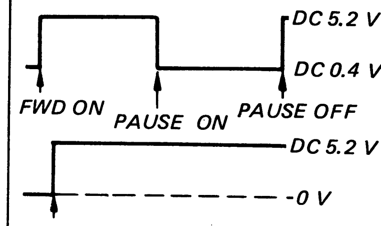
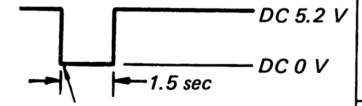
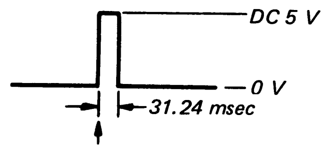
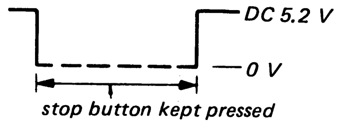
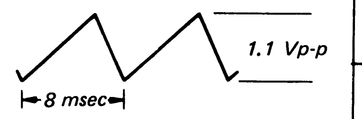
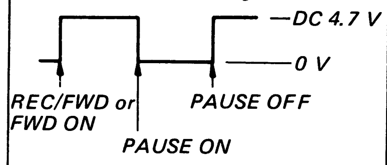
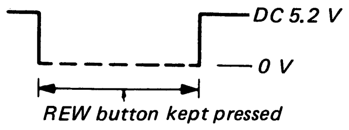
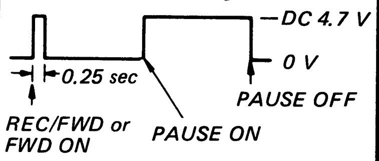
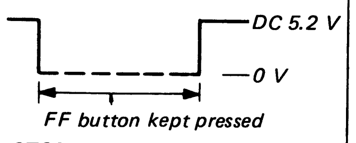
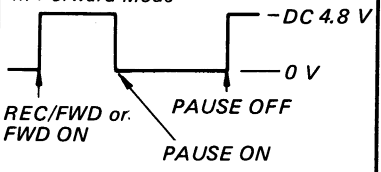
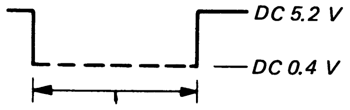
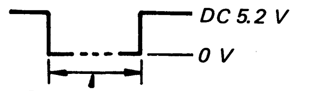
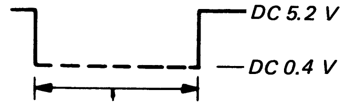
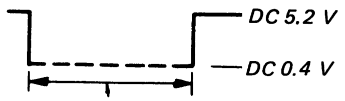
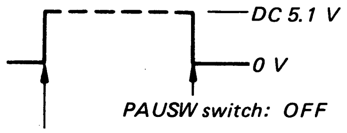
no mark: STOP mode
(( )) : FWD, REC/FWD, REW mode
● : REC mode
▶ : FWD mode
●/▶ : REC/FWD mode
▶▶ : FF mode
◀◀ : REW mode
○ : REC MUTE mode
❚❚ : PAUSE mode

CIRCUIT BOARD LOCATION



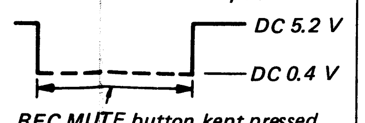
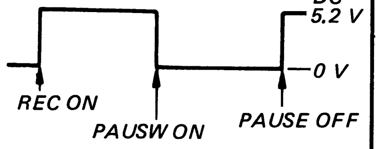
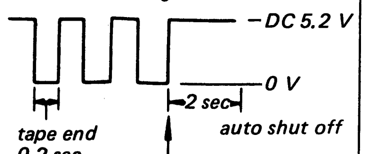
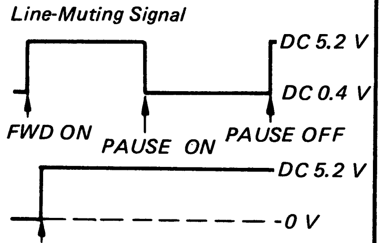
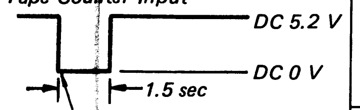
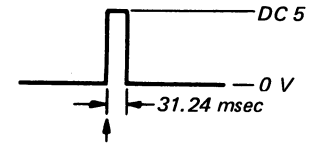
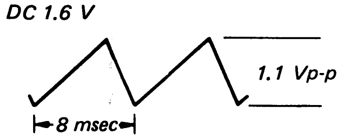
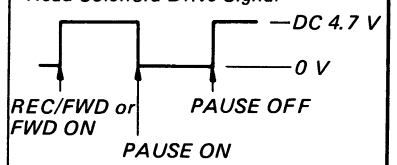
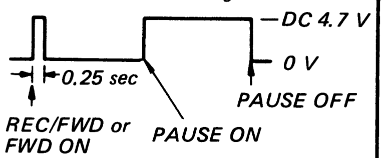
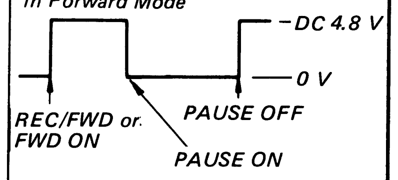
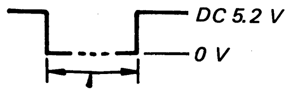
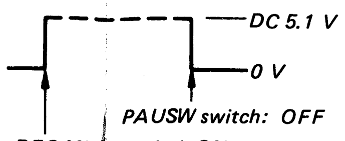
Note: Voltages are measured with an oscilloscope (10 MΩ probe). So readings are different from the mounting diagram and schematic diagram measured with a VOM.

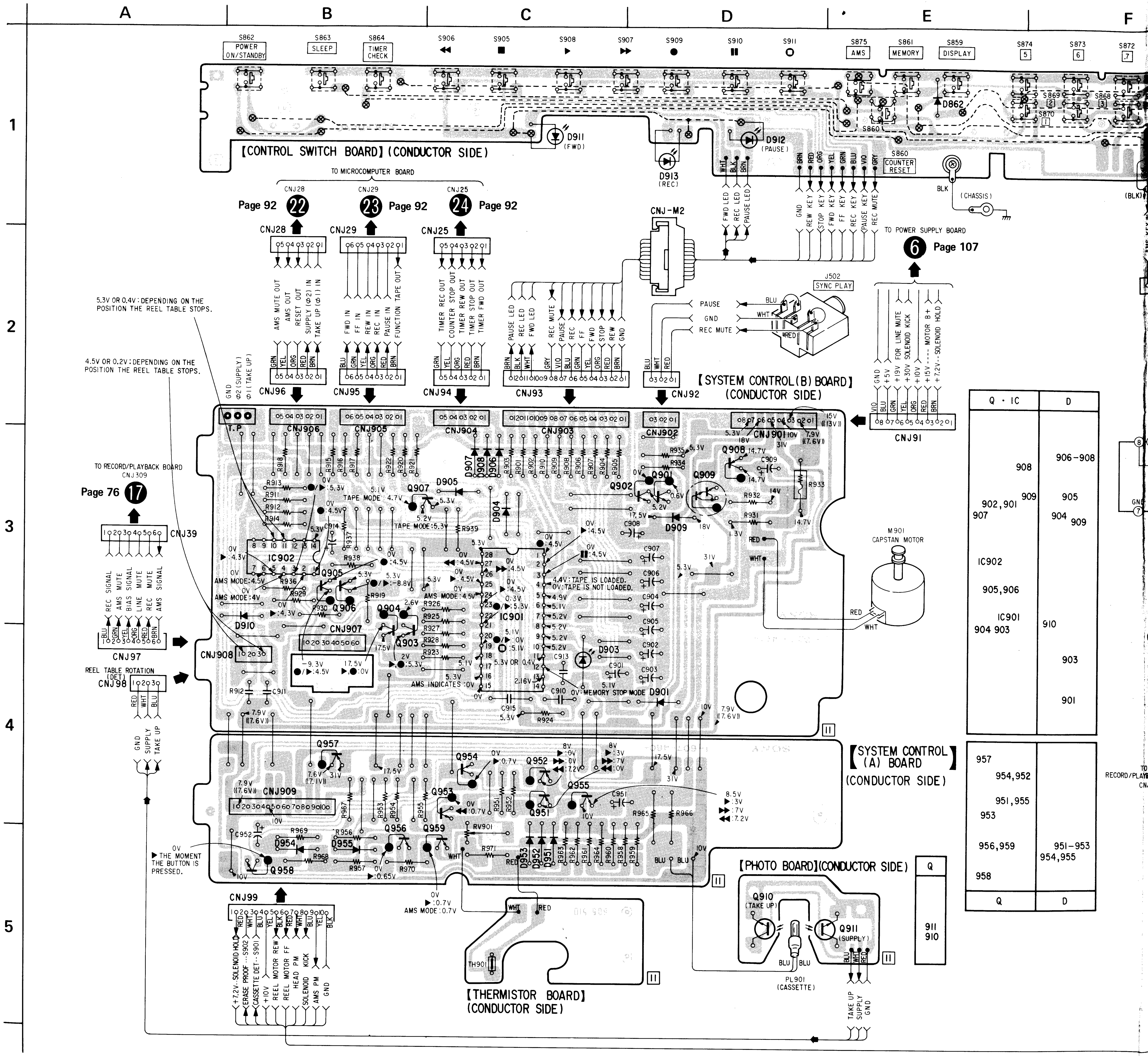
IC901's Terminal Name, Waveform and/or Voltages

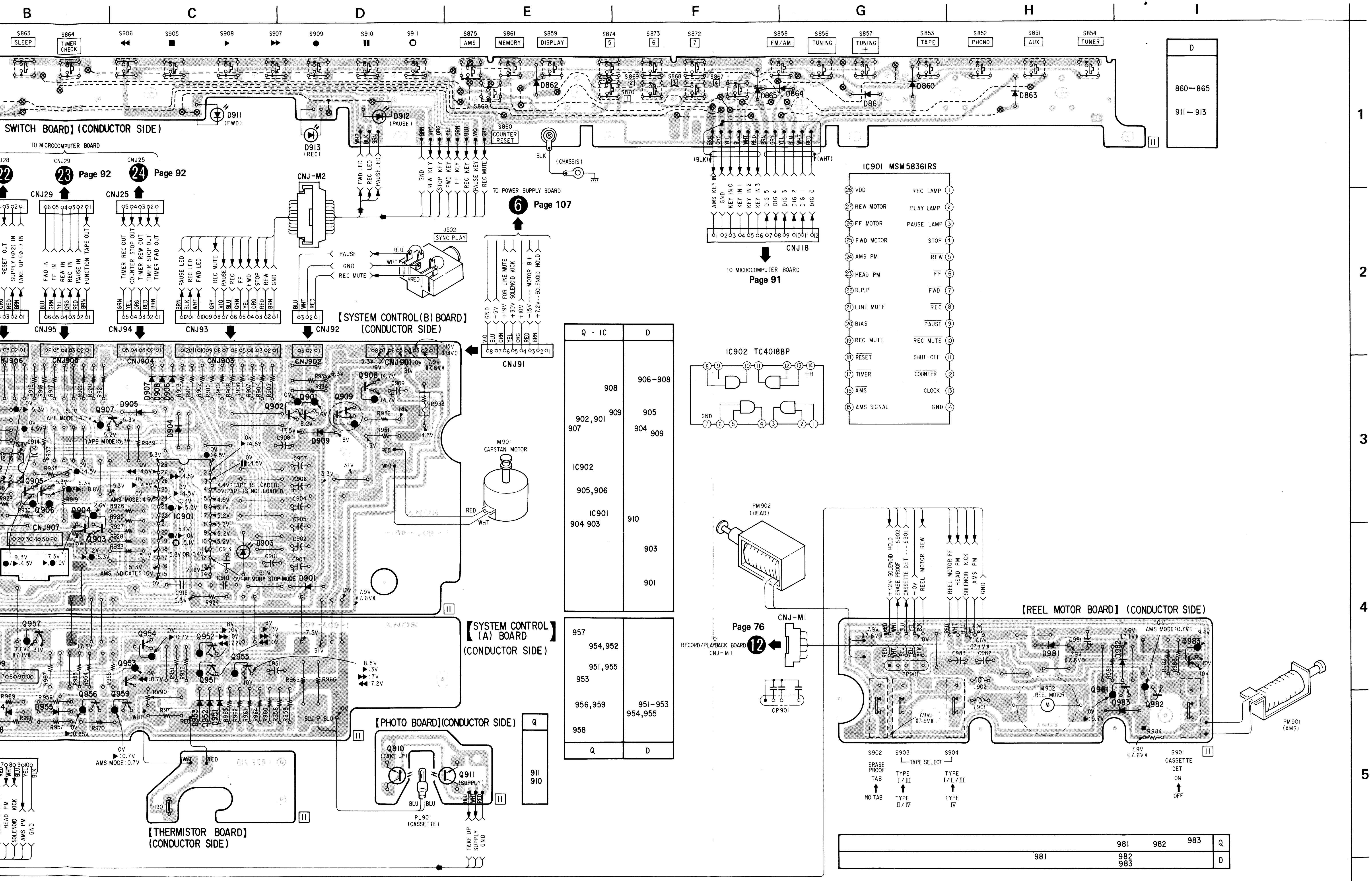
Pin No.	Waveform and/or Voltages	Pin No.	Waveform and/or Voltages	Pin No.	Waveform and/or Voltages
①	● *Lamp Drive* *REC mode: DC 4.5 V* *STOP mode: DC 0 V*	⑩	◉ *REC MUTE Switch Input*  *REC MUTE button kept pressed* *STOP mode: DC 5.2 V*	⑳	*Bias Signal (not used in this set)* 
②	▶ *Lamp Drive* *REC/FWD mode and FWD mode: DC 4.5 V* *STOP mode: DC 0 V*	⑪	*Auto Shut-Off Signal*  *becomes in stop mode at tape end in forward mode. (may become in 0 V according to the position of take-up reel spindle.)*	㉑	*Line-Muting Signal*  *REC/FWD ON or only REC switch ON*
③	❚❚ *Lamp Drive* *PAUSE mode: DC 4.6 V* *STOP mode: DC 0 V*	⑫	*Tape Counter Input*  *memory stop mode* *(memory stop at tape counter value "0.00"*	㉒	*R.P.P. Signal (not used in this set) 0 V*  *PAUSE switch ON in REC/FWD mode*
④	■ *STOP Switch Input*  *stop button kept pressed* *STOP mode: DC 0 V*	⑬	*Clock Signal* *DC 1.6 V* 	㉓	*Head-Solenoid Drive Signal*  *STOP mode: DC 0 V*
⑤	◀◀ *REW Switch Input*  *REW button kept pressed* *STOP mode: DC 4 V*	⑭	*GND*	㉔	*AMS Solenoid Drive Signal*  *STOP mode: DC 0 V*
⑥	▶▶ *FF Switch Input*  *FF button kept pressed* *STOP mode: DC 0 V*	⑮	*AMS Signal* *AMS mode: DC 4.7 V*	㉕	*Reel-Motor Drive Signal in Forward Mode*  *STOP mode: DC 0 V* *FF mode: DC 0.3 V*
⑦	▶ *FWD Switch Input*  *FWD button kept pressed*	⑯	*AMS-MODE Signal (AMS)*  *AMS indication by pressing AMS button.*	㉖	*Reel-Motor Drive Signal in Fast-Forward Mode* *FF mode: DC 4.8 V* *REC/FWD mode, FWD mode: DC 0.3 V* *STOP mode, PAUSE mode, REW mode: DC 0 V*
⑧	● *REC Switch Input*  *REC button kept pressed* *STOP mode: DC 4.6 V*	⑰	*Timer Signal* *DC 5.2 V*	㉗	*Reel-Motor Drive Signal in Rewind Mode* *REW mode: DC 4.8 V* *STOP mode: DC 0 V*
⑨	❚❚ *PAUSE Switch Input*  *PAUSE button kept pressed* *STOP mode: DC 5.2 V*	⑱	*Reset Signal (RESET)* *DC 5.2 V*	㉘	*B+ Supply Voltage DC 5.2 V*
		⑲	*Record-Muting Signal*  *REC MUTE switch ON in record/foward mode*		

cilloscope (10 MΩ probe). So readings are different
chematic diagram measured with a VOM.

IC901's Terminal Name, Waveform and/or Voltages

Pin No.	Waveform and/or Voltages	Pin No.	Waveform and/or Voltages
⑩	● $\overline{\text{REC MUTE}}$ Switch Input  DC 5.2 V DC 0.4 V REC MUTE button kept pressed STOP mode: DC 5.2 V	⑳	Bias Signal (not used in this set)  DC 5.2 V 0 V REC ON PAUSW ON PAUSE OFF
⑪	Auto Shut-Off Signal  DC 5.2 V 0 V 2 sec tape end 0.2 sec auto shut off becomes in stop mode at tape end in forward mode. (may become in 0 V according to the position of take-up reel spindle.)	㉑	Line-Muting Signal  DC 5.2 V DC 0.4 V FWD ON PAUSE ON PAUSE OFF DC 5.2 V -0 V REC/FWD ON or only REC switch ON
⑫	$\overline{\text{Tape Counter}}$ Input  DC 5.2 V DC 0 V 1.5 sec memory stop mode (memory stop at tape counter value "0.00"	㉒	R.P.P. Signal (not used in this set) 0 V  DC 5 V 0 V 31.24 msec PAUSE switch ON in REC/FWD mode
⑬	Clock Signal DC 1.6 V  1.1 Vp-p 8 msec	㉓	Head-Solenoid Drive Signal  DC 4.7 V 0 V REC/FWD or FWD ON PAUSE OFF PAUSE ON STOP mode: DC 0 V
⑭	GND	㉔	AMS Solenoid Drive Signal  DC 4.7 V 0 V 0.25 sec PAUSE OFF REC/FWD or FWD ON PAUSE ON STOP mode: DC 0 V
⑮	AMS Signal AMS mode: DC 4.7 V	㉕	Reel-Motor Drive Signal in Forward Mode  DC 4.8 V 0 V REC/FWD or FWD ON PAUSE OFF PAUSE ON STOP mode: DC 0 V FF mode: DC 0.3 V
⑯	AMS-MODE Signal ($\overline{\text{AMS}}$)  AMS indication by pressing AMS button.	㉖	Reel-Motor Drive Signal in Fast-Forward Mode FF mode: DC 4.8 V REC/FWD mode, FWD mode : DC 0.3 V STOP mode, PAUSE mode, REW mode : DC 0 V
⑰	Timer Signal DC 5.2 V	㉗	Reel-Motor Drive Signal in Rewind Mode REW mode: DC 4.8 V STOP mode: DC 0 V
⑱	Reset Signal ($\overline{\text{RESET}}$) DC 5.2 V	㉘	B+ Supply Voltage DC 5.2 V
⑲	Record-Muting Signal  DC 5.1 V 0 V PAUSW switch: OFF REC MUTE switch ON in record/foward mode		


A
B
C
D
E
F
1
2
3
4
5
S862 POWER ON/STANDBY
S863 SLEEP
S864 TIMER CHECK
S906
S905
S908
S907
S909
S910
S911
S875 AMS
S861 MEMORY
S859 DISPLAY
S874 5
S873 6
S872 7
S860 COUNTER RESET
D911 (FWD)
D912 (PAUSE)
D913 (REC)
D862
【CONTROL SWITCH BOARD】(CONDUCTOR SIDE)
TO MICROCOMPUTER BOARD
Page 92 ㉒ CNJ28
㉓ Page 92 CNJ29
㉔ Page 92 CNJ25
CNJ-M2
TO POWER SUPPLY BOARD
⑥ Page 107
J502 SYNC PLAY
PAUSE
GND
REC MUTE
【SYSTEM CONTROL (B) BOARD】(CONDUCTOR SIDE)
5.3V OR 0.4V : DEPENDING ON THE POSITION THE REEL TABLE STOPS.
4.5V OR 0.2V : DEPENDING ON THE POSITION THE REEL TABLE STOPS.
CNJ96
CNJ95
CNJ94
CNJ93
CNJ92
CNJ91
TO RECORD/PLAYBACK BOARD CNJ309
Page 76 ⑰
CNJ39
CNJ97
CNJ908
REEL TABLE ROTATION (DET)
CNJ98
IC902
IC901
CNJ907
CNJ909
CNJ99
M901 CAPSTAN MOTOR
4.4V : TAPE IS LOADED.
0V : TAPE IS NOT LOADED.
AMS INDICATES : 0V
0V : MEMORY STOP MODE
0V ▶ THE MOMENT THE BUTTON IS PRESSED.
【SYSTEM CONTROL (A) BOARD】(CONDUCTOR SIDE)
【PHOTO BOARD】(CONDUCTOR SIDE)
Q910 (TAKE UP)
Q911 (SUPPLY)
PL901 (CASSETTE)
【THERMISTOR BOARD】(CONDUCTOR SIDE)
TH901
(CHASSIS)
TO RECORD/PLAY
Q · IC
D
Q
D



B
C
D
E
F
G
H
I
1
2
3
4
5
S863 SLEEP
S864 TIMER CHECK
S906 ◀◀
S905 ■
S908 ▶
S907 ▶▶
S909 ●
S910 ❚❚
S911 O
S875 AMS
S861 MEMORY
S859 DISPLAY
S874 5
S873 6
S872 7
S858 FM/AM
S856 TUNING −
S857 TUNING +
S853 TAPE
S852 PHONO
S851 AUX
S854 TUNER
SWITCH BOARD] (CONDUCTOR SIDE)
D911 (FWD)
D912 (PAUSE)
D913 (REC)
D862
D865
D864
D860
D861
D863
S860
S869 2
S868 3
S867 4
S870 1
S860 COUNTER RESET
BLK (CHASSIS)
(BLK)
(WHT)
TO MICROCOMPUTER BOARD
CNJ29 Page 92
CNJ25 Page 92
CNJ-M2
FWD LED
REC LED
PAUSE LED
GND
REW KEY
STOP KEY
FWD KEY
FF KEY
REC KEY
PAUSE KEY
REC MUTE
TO POWER SUPPLY BOARD
6 Page 107
AMS KEY IN
GND
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
DIG 5
DIG 4
DIG 3
DIG 2
DIG 1
DIG 0
CNJ18
TO MICROCOMPUTER BOARD
Page 91
RESET OUT
SUPPLY (φ2) IN
TAKE UP (φ1) IN
FWD IN
FF IN
REW IN
REC IN
PAUSE IN
FUNCTION
TAPE OUT
TIMER REC OUT
COUNTER STOP OUT
TIMER REW OUT
TIMER STOP OUT
TIMER FWD OUT
PAUSE LED
REC LED
FWD LED
REC MUTE
PAUSE
REC
FF
FWD
STOP
REW
GND
J502 SYNC PLAY
PAUSE
GND
REC MUTE
GND
+5V
+19V FOR LINE MUTE
+30V SOLENOID KICK
+10V
+15V --- MOTOR B+
+7.2V-- SOLENOID HOLD
CNJ95
CNJ94
CNJ93
CNJ92
CNJ91
[SYSTEM CONTROL (B) BOARD] (CONDUCTOR SIDE)
CNJ906
CNJ905
CNJ904
CNJ903
CNJ902
CNJ901
CNJ907
IC901
Q901
Q902
Q903
Q904
Q905
Q906
Q907
Q908
Q909
D901
D903
D904
D905
D909
TAPE MODE: 4.7V
TAPE MODE: 5.3V
AMS MODE: 4.5V
AMS INDICATES
4.4V: TAPE IS LOADED.
0V: TAPE IS NOT LOADED.
MEMORY STOP MODE
M901 CAPSTAN MOTOR
[SYSTEM CONTROL (A) BOARD] (CONDUCTOR SIDE)
Q951
Q952
Q953
Q954
Q955
Q956
Q957
Q959
D955
RV901
AMS MODE: 0.7V
[THERMISTOR BOARD] (CONDUCTOR SIDE)
TH901
[PHOTO BOARD] (CONDUCTOR SIDE)
Q910 (TAKE UP)
Q911 (SUPPLY)
PL901 (CASSETTE)
TAKE UP
SUPPLY
GND
HEAD PM
KICK
SOLENOID
AMS PM
GND
PM902 (HEAD)
Page 76
TO RECORD/PLAYBACK BOARD CNJ-M1
12
CNJ-M1
CP901
+7.2V SOLENOID HOLD
ERASE PROOF --- S902
CASSETTE DET --- S901
+10V
REEL MOTOR REW
REEL MOTOR FF
HEAD PM
SOLENOID KICK
AMS PM
GND
[REEL MOTOR BOARD] (CONDUCTOR SIDE)
D981
D982
D983
Q981
Q982
Q983
M902 REEL MOTOR
L901
L902
AMS MODE: 0.7V
PM901 (AMS)
S902 ERASE PROOF TAB ↑ NO TAB
S903 TYPE I/III ↑ TYPE II/IV
S904 TYPE I/II/III ↑ TYPE IV
TAPE SELECT
S901 CASSETTE DET ON ↑ OFF
IC901 MSM58361RS
28 VDD
27 REW MOTOR
26 FF MOTOR
25 FWD MOTOR
24 AMS PM
23 HEAD PM
22 R.P.P
21 LINE MUTE
20 BIAS
19 REC MUTE
18 RESET
17 TIMER
16 AMS
15 AMS SIGNAL
1 REC LAMP
2 PLAY LAMP
3 PAUSE LAMP
4 STOP
5 REW
6 FF
7 FWD
8 REC
9 PAUSE
10 REC MUTE
11 SHUT-OFF
12 COUNTER
13 CLOCK
14 GND
IC902 TC4018BP
+B
GND

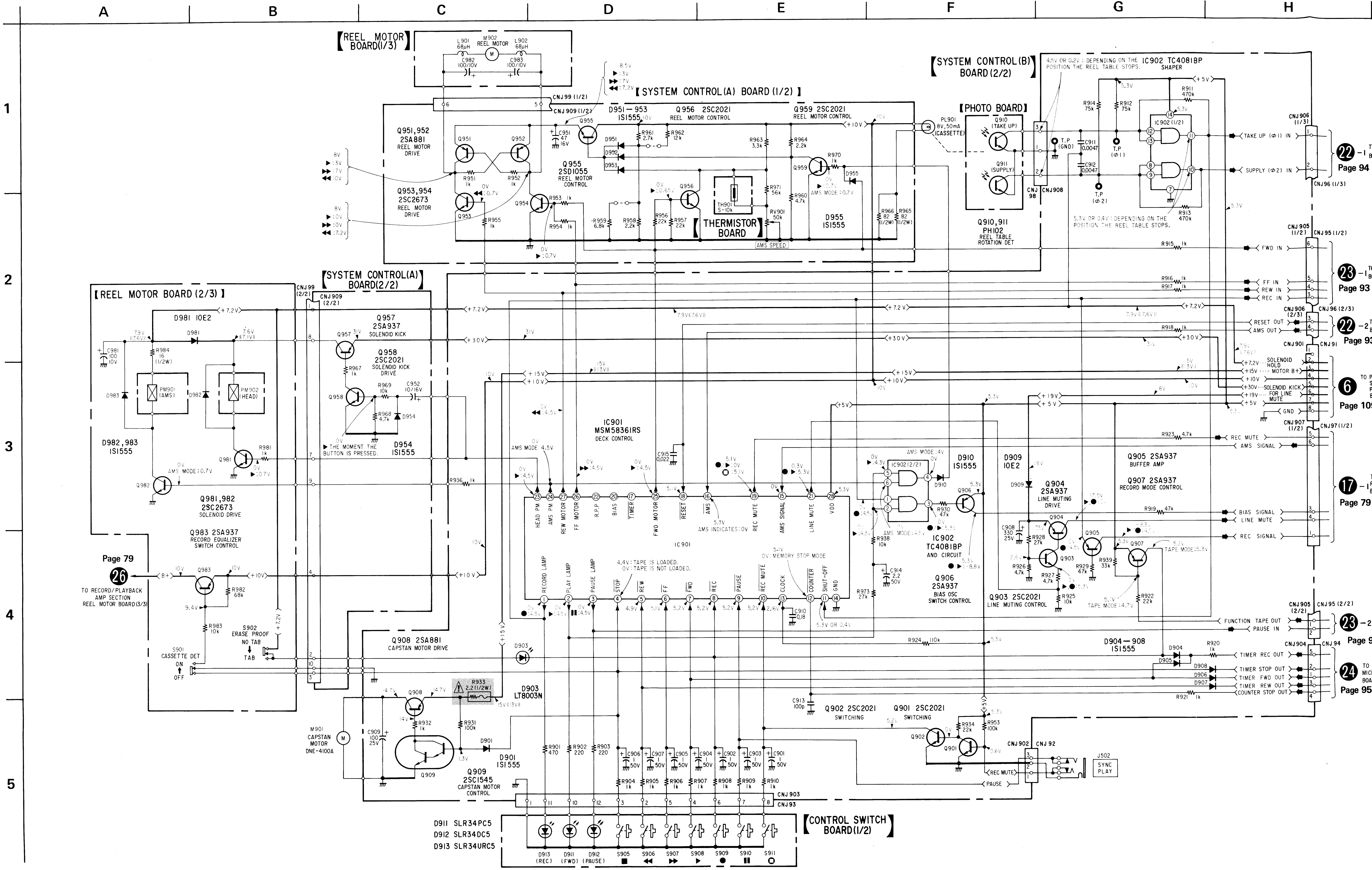
D
860–865
911–913

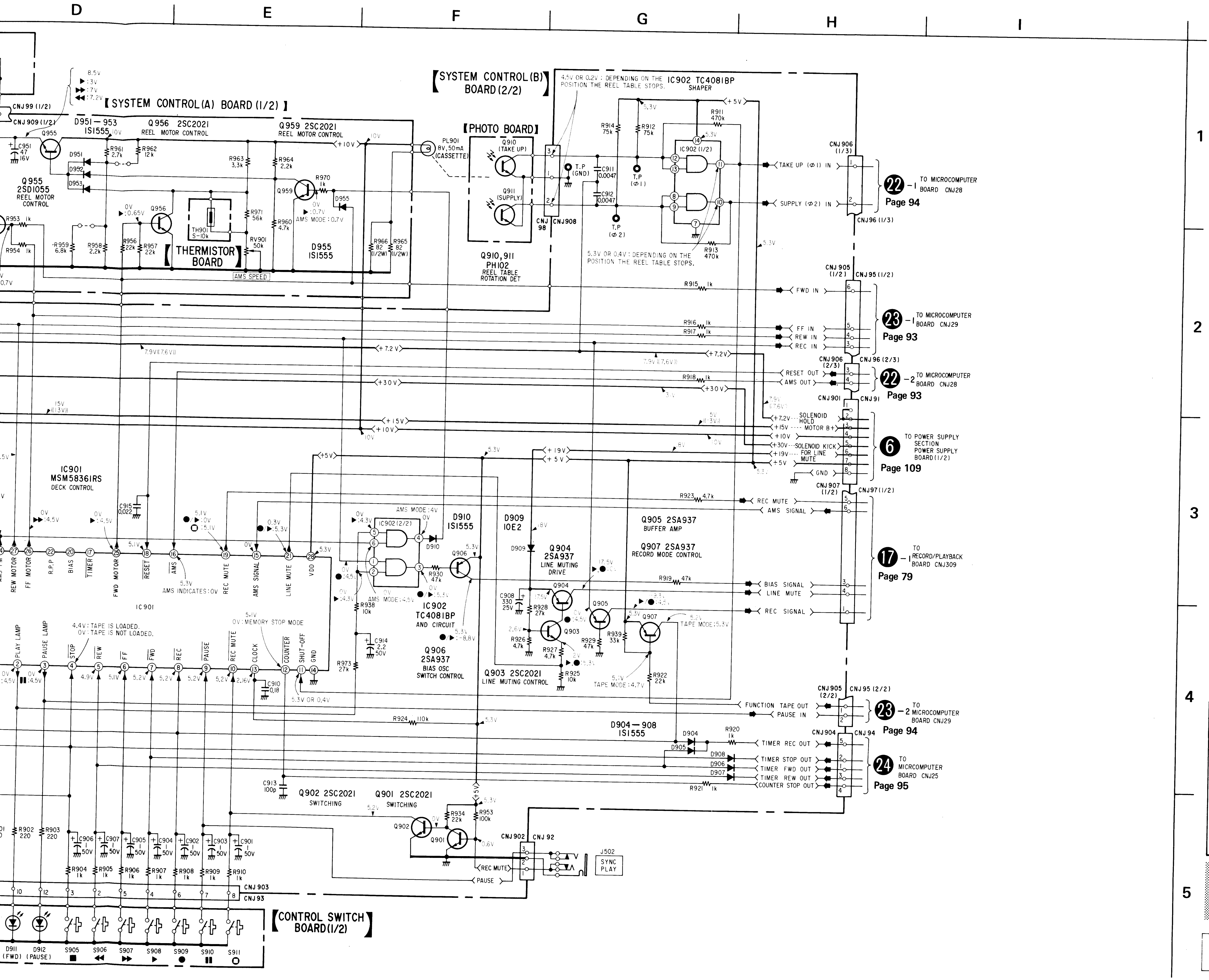
Q · IC	D
	906–908
908	
909	905
902,901 907	904 909
IC902	
905,906	
IC901 904 903	910
	903
	901
957	
954,952	
951,955	
953	
956,959	951–953 954,955
958	
Q	D

Q
911 910

	981	982	983	Q
981	982 983			D

4-11. SCHEMATIC DIAGRAM – *SYSTEM CONTROL SECTION* –


A
B
C
D
E
F
G
H
1
2
3
4
5
REEL MOTOR BOARD(1/3)
M902 REEL MOTOR
L901 68μH
L902 68μH
C982 100/10V
C983 100/10V
CNJ99 (1/2)
CNJ909 (1/2)
SYSTEM CONTROL(A) BOARD (1/2)
Q951,952 2SA881 REEL MOTOR DRIVE
Q953,954 2SC2673 REEL MOTOR DRIVE
Q955 2SD1055 REEL MOTOR CONTROL
D951 – 953 1S1555
Q956 2SC2021 REEL MOTOR CONTROL
Q959 2SC2021 REEL MOTOR CONTROL
TH901 S-10k
THERMISTOR BOARD
RV901 50k
AMS SPEED
D955 1S1555
SYSTEM CONTROL(B) BOARD (2/2)
PHOTO BOARD
PL901 8V, 50mA (CASSETTE)
Q910 (TAKE UP)
Q911 (SUPPLY)
Q910,911 PH102 REEL TABLE ROTATION DET
4.5V OR 0.2V : DEPENDING ON THE POSITION THE REEL TABLE STOPS.
IC902 TC4081BP SHAPER
5.3V OR 0.4V : DEPENDING ON THE POSITION THE REEL TABLE STOPS.
T.P (GND)
T.P (φ1)
T.P (φ2)
TAKE UP (φ1) IN
SUPPLY (φ2) IN
CNJ906 (1/3)
CNJ96 (1/3)
22 -1
Page 94
FWD IN
FF IN
REW IN
REC IN
CNJ905 (1/2)
CNJ95 (1/2)
23 -1
Page 93
RESET OUT
AMS OUT
CNJ906 (2/3)
CNJ96 (2/3)
22 -2
Page 93
CNJ901
CNJ91
SOLENOID HOLD
MOTOR B+
SOLENOID KICK
FOR LINE MUTE
GND
6
Page 10
CNJ907 (1/2)
CNJ97 (1/2)
REC MUTE
AMS SIGNAL
17 -1
Page 79
BIAS SIGNAL
LINE MUTE
REC SIGNAL
REEL MOTOR BOARD (2/3)
SYSTEM CONTROL(A) BOARD(2/2)
CNJ99 (2/2)
CNJ909 (2/2)
D981 10E2
PM901 (AMS)
PM902 (HEAD)
D982,983 1S1555
Q981,982 2SC2673 SOLENOID DRIVE
Q983 2SA937 RECORD EQUALIZER SWITCH CONTROL
Q957 2SA937 SOLENOID KICK
Q958 2SC2021 SOLENOID KICK DRIVE
D954 1S1555
▶ THE MOMENT THE BUTTON IS PRESSED.
IC901 MSM5836IRS DECK CONTROL
HEAD PM
AMS PM
REW MOTOR
FF MOTOR
R.P.P
BIAS
TIMER
FWD MOTOR
RESET
AMS
REC MUTE
AMS SIGNAL
LINE MUTE
VDD
RECORD LAMP
PLAY LAMP
PAUSE LAMP
STOP
REW
FF
FWD
REC
PAUSE
REC MUTE
CLOCK
COUNTER
SHUT-OFF
GND
AMS INDICATES : 0V
4.4V : TAPE IS LOADED. 0V : TAPE IS NOT LOADED.
5.1V 0V : MEMORY STOP MODE
D910 1S1555
IC902 TC4081BP AND CIRCUIT
Q906 2SA937 BIAS OSC SWITCH CONTROL
D909 10E2
Q904 2SA937 LINE MUTING DRIVE
Q903 2SC2021 LINE MUTING CONTROL
Q905 2SA937 BUFFER AMP
Q907 2SA937 RECORD MODE CONTROL
TAPE MODE : 5.3V
TAPE MODE : 4.7V
Page 79
26
TO RECORD/PLAYBACK AMP SECTION REEL MOTOR BOARD(3/3)
S901 CASSETTE DET ON OFF
S902 ERASE PROOF NO TAB TAB
Q908 2SA881 CAPSTAN MOTOR DRIVE
R933 2.2(1/2W)
D903 LT8003N
M901 CAPSTAN MOTOR DNE-4100A
Q909 2SC1545 CAPSTAN MOTOR CONTROL
D901 1S1555
FUNCTION TAPE OUT
PAUSE IN
CNJ905 (2/2)
CNJ95 (2/2)
23 -2
D904 – 908 1S1555
TIMER REC OUT
TIMER STOP OUT
TIMER FWD OUT
TIMER REW OUT
COUNTER STOP OUT
CNJ904
CNJ94
24
Page 95
Q902 2SC2021 SWITCHING
Q901 2SC2021 SWITCHING
CNJ902
CNJ92
REC MUTE
PAUSE
J502 SYNC PLAY
CNJ903
CNJ93
D911 SLR34PC5
D912 SLR34DC5
D913 SLR34URC5
CONTROL SWITCH BOARD(1/2)
D913 (REC)
D911 (FWD)
D912 (PAUSE)
S905 ■
S906 ◀◀
S907 ▶▶
S908 ▶
S909 ●
S910 ❚❚
S911 ○


D
E
F
G
H
I
1
2
3
4
5
[SYSTEM CONTROL (A) BOARD (1/2)]
[SYSTEM CONTROL (B) BOARD (2/2)]
[PHOTO BOARD]
[THERMISTOR BOARD]
[CONTROL SWITCH BOARD (1/2)]
CNJ 99 (1/2)
CNJ 909 (1/2)
D951 — 953 1S1555
Q956 2SC2021 REEL MOTOR CONTROL
Q959 2SC2021 REEL MOTOR CONTROL
Q955 2SD1055 REEL MOTOR CONTROL
D955 1S1555
TH901 S-10k
RV901 50k
AMS SPEED
PL901 8V, 50mA (CASSETTE)
Q910 (TAKE UP)
Q911 (SUPPLY)
Q910, 911 PH102 REEL TABLE ROTATION DET
CNJ 98
CNJ 908
4.5V OR 0.2V : DEPENDING ON THE POSITION THE REEL TABLE STOPS.
IC902 TC4081BP SHAPER
IC902 (1/2)
5.3V OR 0.4V : DEPENDING ON THE POSITION THE REEL TABLE STOPS.
T.P (GND)
T.P (Φ1)
T.P (Φ2)
CNJ 906 (1/3)
CNJ 96 (1/3)
TAKE UP (Φ1) IN
SUPPLY (Φ2) IN
22 -1 TO MICROCOMPUTER BOARD CNJ28
Page 94
CNJ 905 (1/2)
CNJ 95 (1/2)
FWD IN
FF IN
REW IN
REC IN
23 -1 TO MICROCOMPUTER BOARD CNJ29
Page 93
CNJ 906 (2/3)
CNJ 96 (2/3)
RESET OUT
AMS OUT
22 -2 TO MICROCOMPUTER BOARD CNJ28
Page 93
CNJ 901
CNJ 91
+7.2V SOLENOID HOLD
+15V MOTOR B+
+10V
+30V SOLENOID KICK
+19V FOR LINE MUTE
+5V
GND
6 TO POWER SUPPLY SECTION POWER SUPPLY BOARD (1/2)
Page 109
CNJ 907 (1/2)
CNJ 97 (1/2)
REC MUTE
AMS SIGNAL
BIAS SIGNAL
LINE MUTE
REC SIGNAL
17 -1 TO RECORD/PLAYBACK BOARD CNJ309
Page 79
IC901 MSM5836IRS DECK CONTROL
REW MOTOR
FF MOTOR
R.P.P
BIAS
TIMER
FWD MOTOR
RESET
AMS
REC MUTE
AMS SIGNAL
LINE MUTE
VDD
AMS INDICATES : 0V
PLAY LAMP
PAUSE LAMP
STOP
REW
FF
FWD
REC
PAUSE
REC MUTE
CLOCK
COUNTER
SHUT-OFF
GND
4.4V : TAPE IS LOADED. 0V : TAPE IS NOT LOADED.
5.1V 0V : MEMORY STOP MODE
5.3V OR 0.4V
IC902 (2/2)
AMS MODE : 4V
D910 1S1555
IC902 TC4081BP AND CIRCUIT
Q906 2SA937 BIAS OSC SWITCH CONTROL
D909 10E2
Q904 2SA937 LINE MUTING DRIVE
Q905 2SA937 BUFFER AMP
Q907 2SA937 RECORD MODE CONTROL
Q903 2SC2021 LINE MUTING CONTROL
TAPE MODE : 5.3V
TAPE MODE : 4.7V
CNJ 905 (2/2)
CNJ 95 (2/2)
FUNCTION TAPE OUT
PAUSE IN
23 -2 TO MICROCOMPUTER BOARD CNJ29
Page 94
D904 — 908 1S1555
CNJ 904
CNJ 94
TIMER REC OUT
TIMER STOP OUT
TIMER FWD OUT
TIMER REW OUT
COUNTER STOP OUT
24 TO MICROCOMPUTER BOARD CNJ25
Page 95
Q902 2SC2021 SWITCHING
Q901 2SC2021 SWITCHING
CNJ 902
CNJ 92
REC MUTE
PAUSE
J502 SYNC PLAY
CNJ 903
CNJ 93
D911 (FWD)
D912 (PAUSE)
S905
S906
S907
S908
S909
S910
S911

Note:

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu$F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ─⌇⌇─ : fusible resistor.
- ▭ : adjustment for repair.
- - - - : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: STOP mode
  (( )) : FWD, REC/FWD, REW mode
  ● : REC mode
  ▶ : FWD mode
  ●/▶ : REC/FWD mode
  ▶▶ : FF mode
  ◀◀ : REW mode
  ○ : REC MUTE mode
  ▮▮ : PAUSE mode

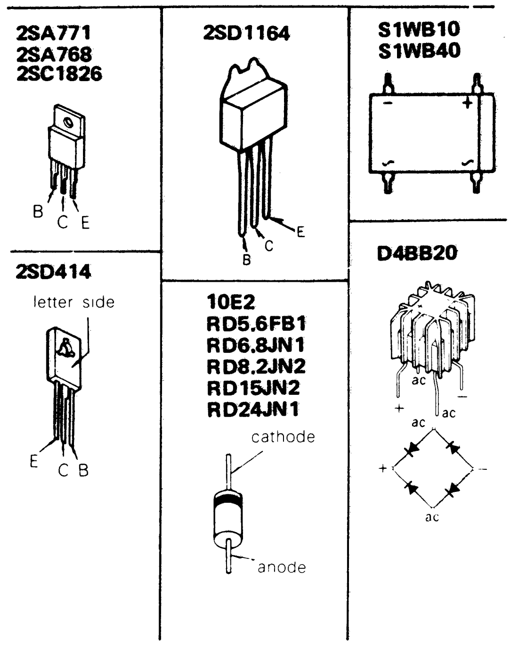
- Switch

Ref. No.	Switch	Position
S901	CASSETTE HALF DETECTOR	OFF
S902	ERASE PROOF	NO TAB
S905	■ (STOP)	OFF
S906	◀◀ (REW)	OFF
S907	▶▶ (FF)	OFF
S908	▶ (FWD)	OFF
S909	● (REC)	OFF
S910	▮▮ (PAUSE)	OFF
S911	○ (REC MUTE)	OFF

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Voltages are measured with a VOM (50kΩ/V).

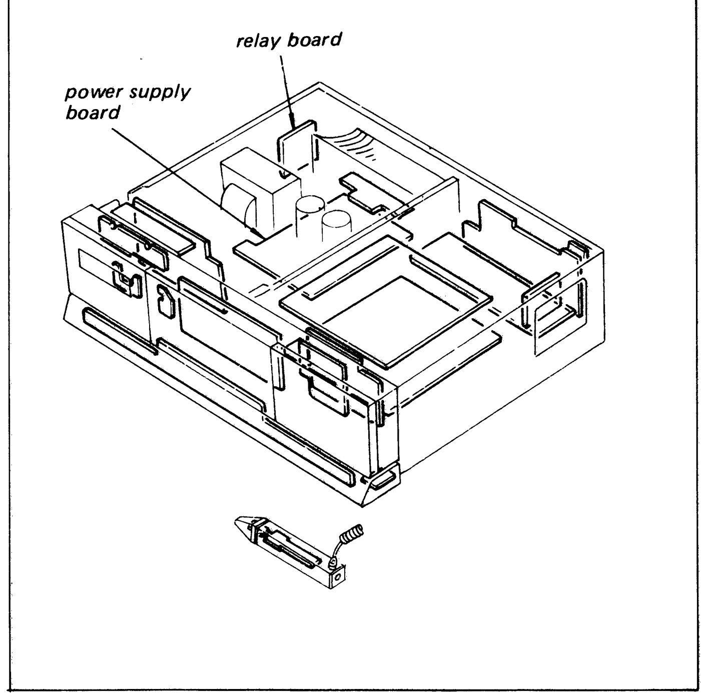
4-12. MOUNTING DIAGRAM – *POWER SUPPLY SECTION* –


2SA771
2SA768
2SC1826
B C E
2SD1164
B C E
S1WB10
S1WB40
2SD414
letter side
E C B
10E2
RD5.6FB1
RD6.8JN1
RD8.2JN2
RD15JN2
RD24JN1
cathode
anode
D4BB20
ac
+
ac
ac
ac

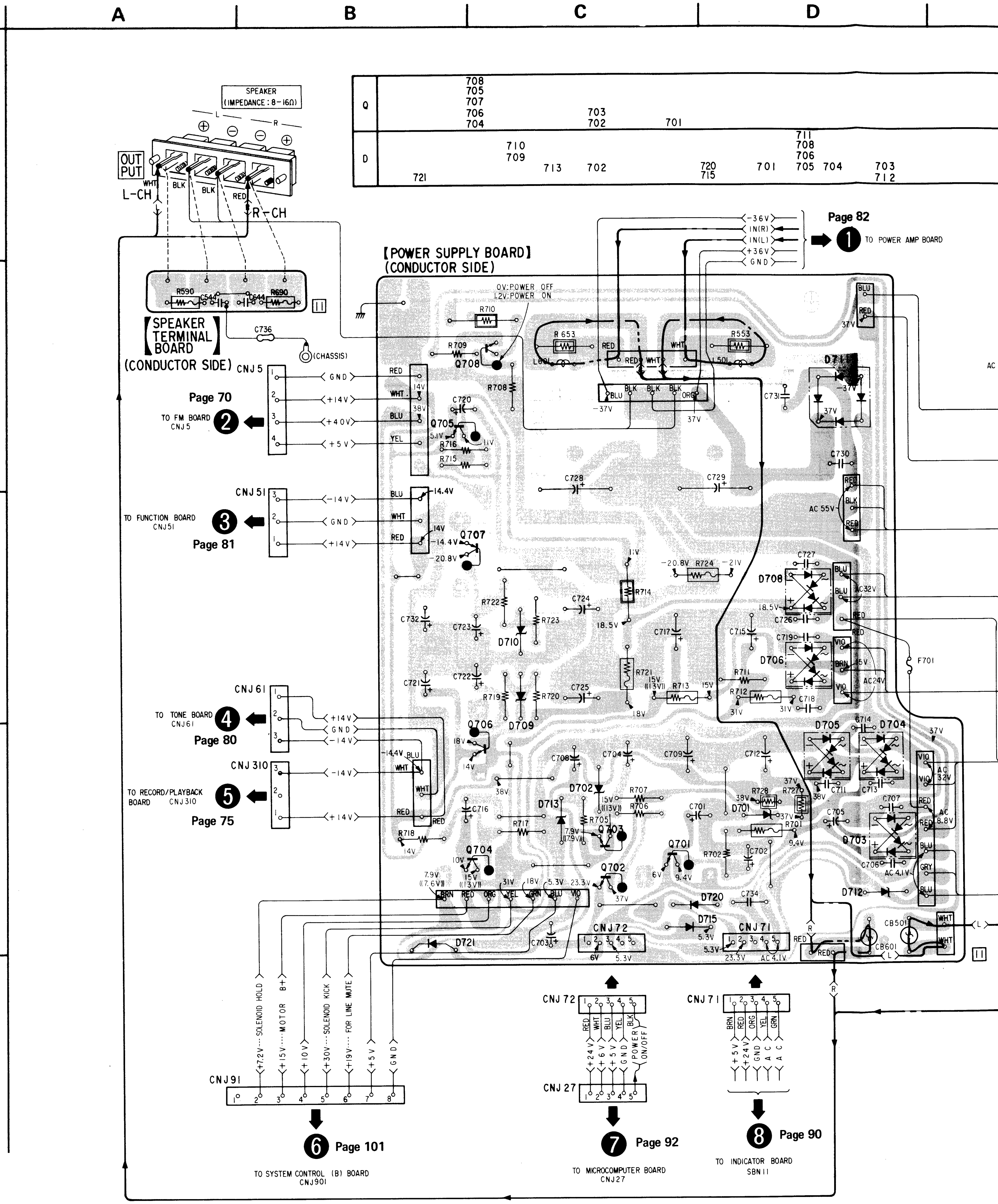
Note:

- ■ : part mounted on the conductor side.
- : B+ pattern
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  (( )) : FWD, REC/FWD, REW mode

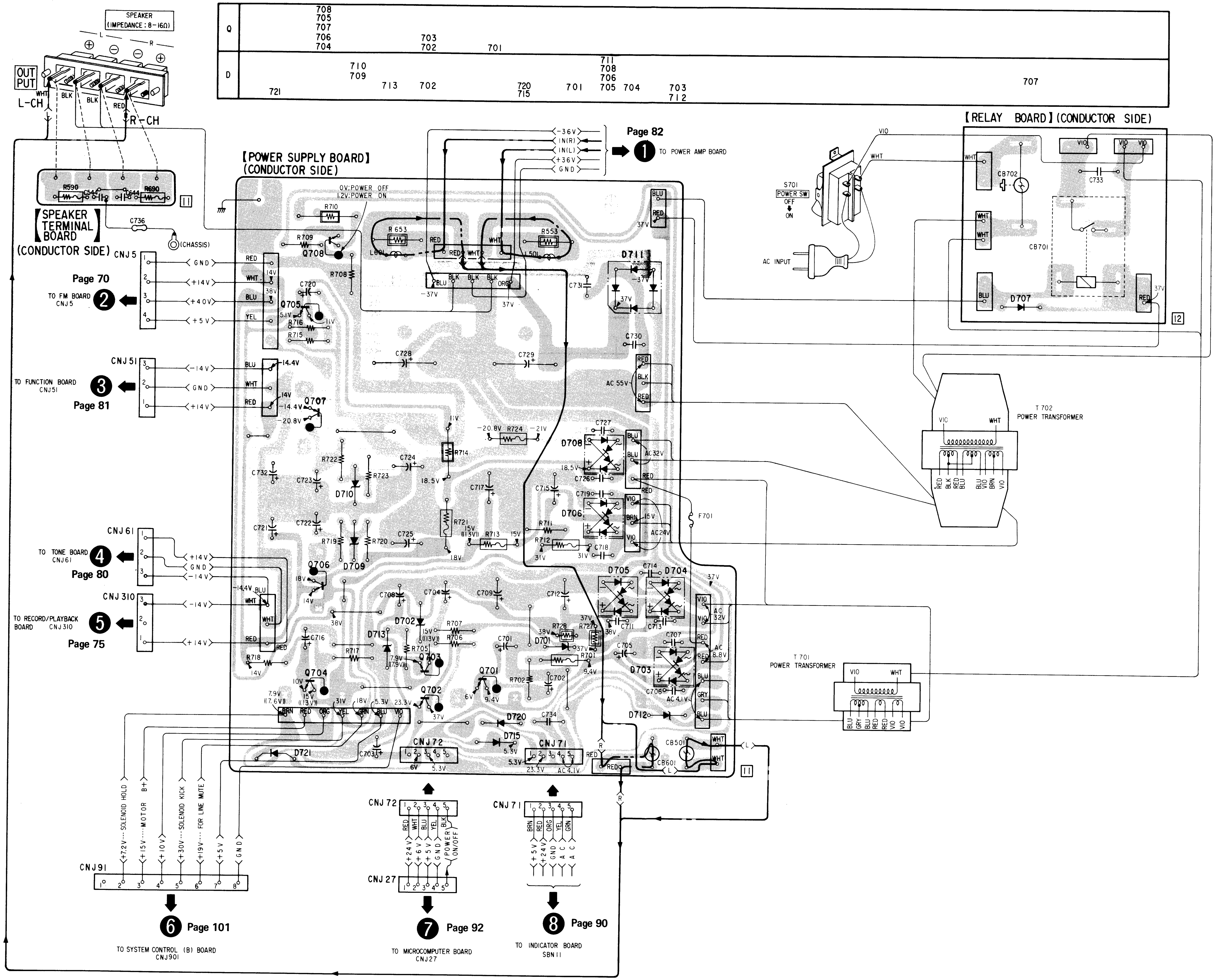
CIRCUIT BOARD LOCATION


relay board
power supply board

	B	C	D
Q		708 705 707 706 704 703 702 701	
D	721	710 709 713 702	720 715 701 711 708 706 705 704 703 712

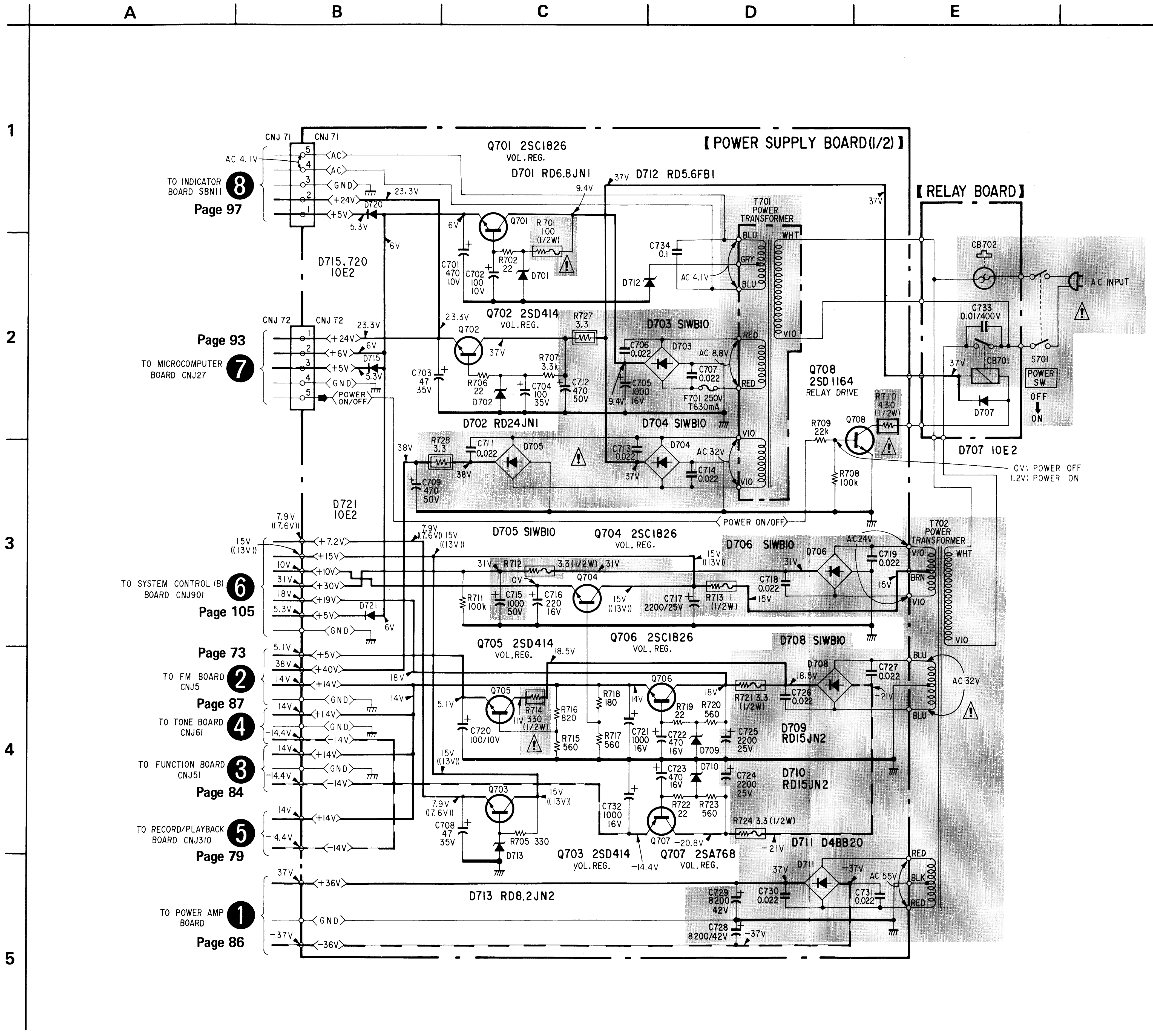

A
B
C
D
1
2
3
4
5
SPEAKER (IMPEDANCE : 8–16Ω)
L
R
OUT PUT
L-CH
R-CH
WHT
BLK
BLK
RED
R590
C544
C644
R690
SPEAKER TERMINAL BOARD
(CONDUCTOR SIDE)
C736
(CHASSIS)
[POWER SUPPLY BOARD]
(CONDUCTOR SIDE)
0V: POWER OFF
12V: POWER ON
Page 82
1
TO POWER AMP BOARD
−36V
IN(R)
IN(L)
+36V
GND
CNJ5
GND
+14V
+40V
+5V
Page 70
TO FM BOARD CNJ5
2
CNJ51
−14V
GND
+14V
TO FUNCTION BOARD CNJ51
3
Page 81
CNJ61
+14V
GND
−14V
TO TONE BOARD CNJ61
4
Page 80
CNJ310
−14V
+14V
TO RECORD/PLAYBACK BOARD CNJ310
5
Page 75
Q708
Q705
Q707
Q706
Q704
Q703
Q702
Q701
D711
D708
D706
D705
D704
D703
D701
D702
D709
D710
D713
D712
D715
D720
D721
F701
AC 55V
AC32V
AC24V
AC 32V
AC 8.8V
AC 4.1V
CB501
CB601
CNJ72
CNJ71
CNJ91
+7.2V···SOLENOID HOLD
+15V···MOTOR B+
+10V
+30V···SOLENOID KICK
+19V···FOR LINE MUTE
+5V
GND
6
Page 101
TO SYSTEM CONTROL (B) BOARD CNJ901
CNJ72
RED WHT BLU YEL BLK
+24V +26V +5V GND POWER ON/OFF
CNJ27
7
Page 92
TO MICROCOMPUTER BOARD CNJ27
CNJ71
BRN RED ORG YEL GRN
+5V +24V GND AC AC
8
Page 90
TO INDICATOR BOARD SBN11

	A	B	C	D	E	F	G
Q			708 705 707 706 704 703 702 701				
D		721	710 709 713 702	720 715 701 711 708 706 705 704 703 712		707	



SPEAKER (IMPEDANCE : 8-16Ω)
L
R
OUT PUT
L-CH
R-CH
WHT
BLK
RED
R590
C544
C644
R690
【SPEAKER TERMINAL BOARD】 (CONDUCTOR SIDE)
C736
(CHASSIS)
【POWER SUPPLY BOARD】 (CONDUCTOR SIDE)
0V: POWER OFF
12V: POWER ON
-36V
IN(R)
IN(L)
+36V
GND
Page 82
❶ TO POWER AMP BOARD
CNJ5
GND
+14V
+40V
+5V
Page 70
❷ TO FM BOARD CNJ5
CNJ51
-14V
GND
+14V
❸ TO FUNCTION BOARD CNJ51
Page 81
CNJ61
+14V
GND
-14V
❹ TO TONE BOARD CNJ61
Page 80
CNJ310
-14V
+14V
❺ TO RECORD/PLAYBACK BOARD CNJ310
Page 75
R710
R709
Q708
R708
C720
Q705
R716
R715
R653
R553
L601
L501
D711
C731
C728
C729
C730
AC 55V
Q707
-20.8V
R724
-21V
C727
D708
AC32V
R714
C724
R722
R723
C723
C732
D710
C717
C715
C719
D706
R721
C725
R713
R711
R712
C718
15V
AC24V
F701
C722
C721
R719
R720
D709
Q706
D705
D704
C714
C708
C704
C709
C712
C716
D702
D713
R707
R706
R705
Q703
R728
R727
D701
C711
C713
C701
R717
R718
R701
C705
C707
D703
AC 8.8V
Q704
Q701
R702
C702
C706
AC 4.1V
Q702
D720
C734
D712
D715
D721
C703
CNJ72
CNJ71
CB501
CB601
T 702 POWER TRANSFORMER
T 701 POWER TRANSFORMER
S701 POWER SW OFF ON
AC INPUT
【RELAY BOARD】(CONDUCTOR SIDE)
CB702
C733
CB701
D707
CNJ91
+7.2V…SOLENOID HOLD
+15V…MOTOR B+
+10V
+30V…SOLENOID KICK
+19V…FOR LINE MUTE
+5V
GND
❻ Page 101
TO SYSTEM CONTROL (B) BOARD CNJ901
CNJ72
+24V
+6V
+5V
GND
POWER ON/OFF
CNJ27
❼ Page 92
TO MICROCOMPUTER BOARD CNJ27
CNJ71
+5V
+24V
GND
AC
AC
❽ Page 90
TO INDICATOR BOARD SBN11

4-13. SCHEMATIC DIAGRAM *– POWER SUPPLY SECTION –*


A
B
C
D
E
F
G
1
2
3
4
5
【POWER SUPPLY BOARD(1/2)】
【RELAY BOARD】
CNJ 71
CNJ 72
TO INDICATOR BOARD SBN11 ⑧ Page 97
TO MICROCOMPUTER BOARD CNJ27 ⑦ Page 93
TO SYSTEM CONTROL (B) BOARD CNJ901 ⑥ Page 105
TO FM BOARD CNJ5 ② Page 73
TO TONE BOARD CNJ61 ④ Page 87
TO FUNCTION BOARD CNJ51 ③ Page 84
TO RECORD/PLAYBACK BOARD CNJ310 ⑤ Page 79
TO POWER AMP BOARD ① Page 86
AC 4.1V
Q701 2SC1826 VOL. REG.
D701 RD6.8JN1
D712 RD5.6FB1
Q702 2SD414 VOL. REG.
D702 RD24JN1
D703 S1WB10
D704 S1WB10
D705 S1WB10
D706 S1WB10
D708 S1WB10
D715,720 10E2
D721 10E2
D707 10E2
Q704 2SC1826 VOL. REG.
Q705 2SD414 VOL. REG.
Q706 2SC1826 VOL. REG.
Q703 2SD414 VOL. REG.
Q707 2SA768 VOL. REG.
Q708 2SD1164 RELAY DRIVE
D709 RD15JN2
D710 RD15JN2
D711 D4BB20
D713 RD8.2JN2
T701 POWER TRANSFORMER
T702 POWER TRANSFORMER
F701 250V T630mA
CB702
C733 0.01/400V
CB701
S701 POWER SW OFF ON
AC INPUT
0V: POWER OFF
1.2V: POWER ON
POWER ON/OFF
AC 8.8V
AC 32V
AC24V
AC 55V
R701 100 (1/2W)
R727 3.3
R728 3.3
R710 430 (1/2W)
R712 3.3(1/2W)
R713 1 (1/2W)
R714 330 (1/2W)
R721 3.3 (1/2W)
R724 3.3 (1/2W)
C729 8200 42V
C728 8200/42V

Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ─[▭]─ : nonflammable resistor.
- ─▭─ : fusible resistor.
- ───: B+ bus.
- – – –: B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
  no mark: FM detuned
  (( )) : FWD, REC/FWD, REW mode
- Switch

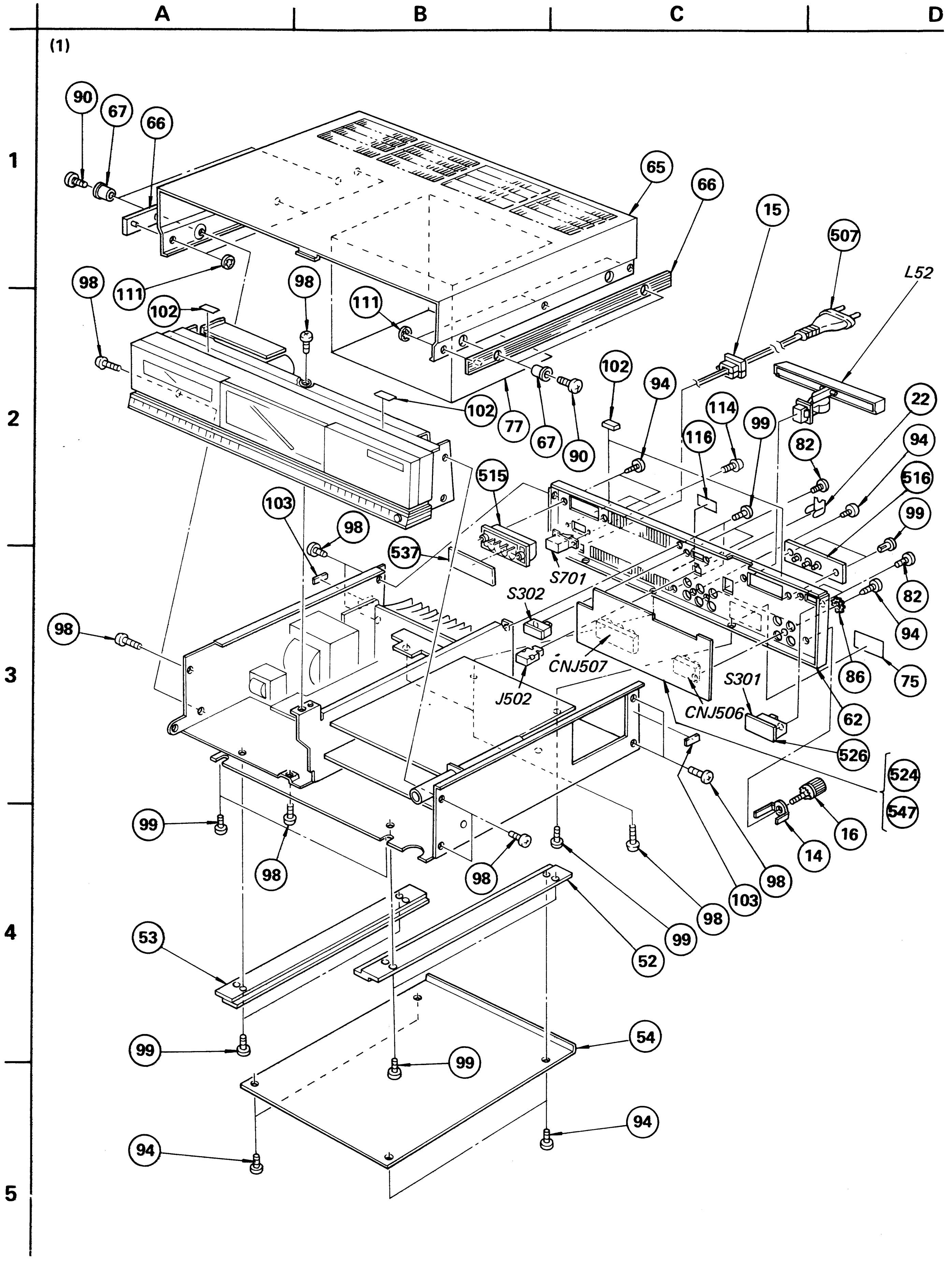
Ref. No.	Switch	Position
S701	POWER SW	OFF

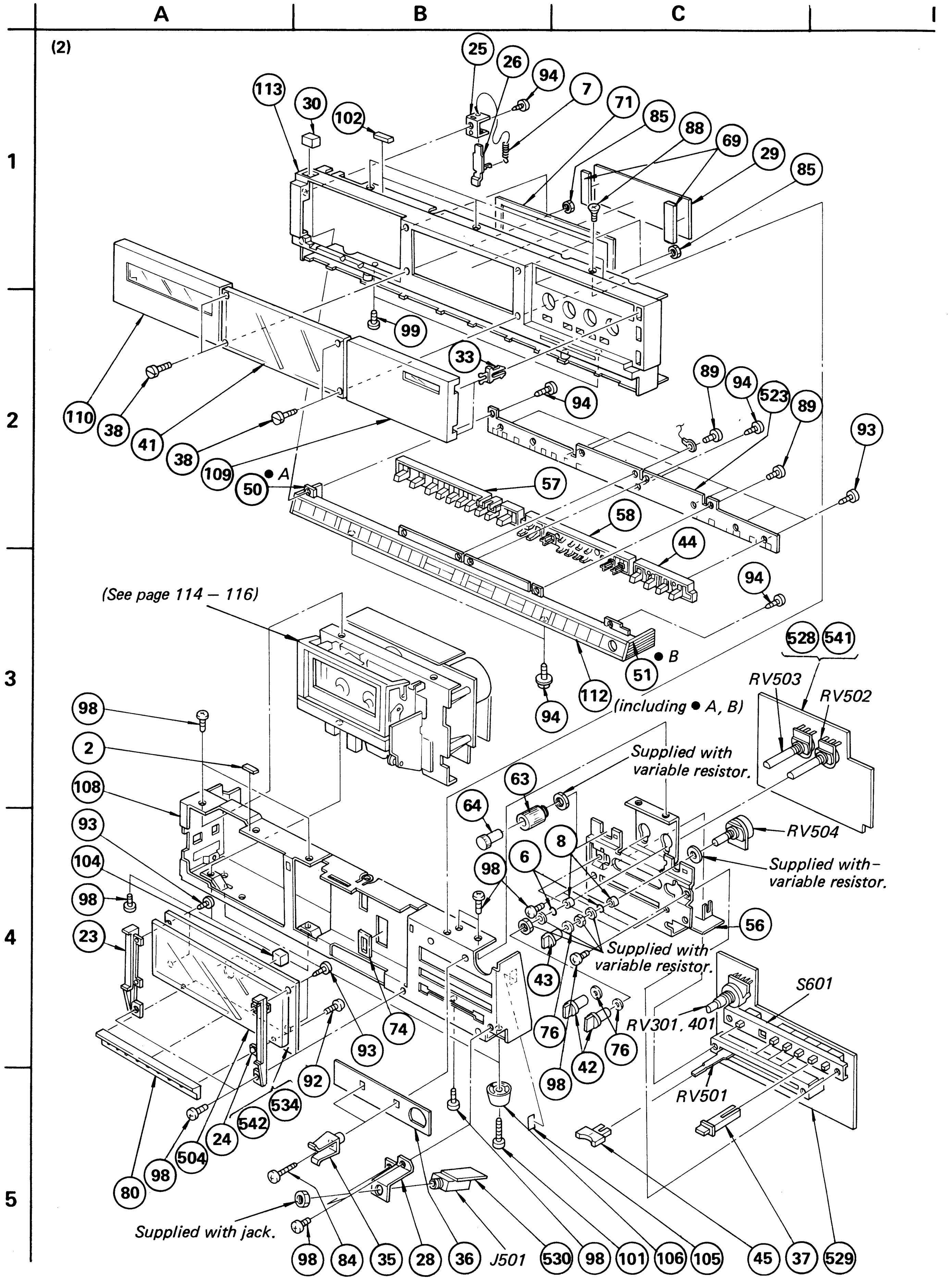
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

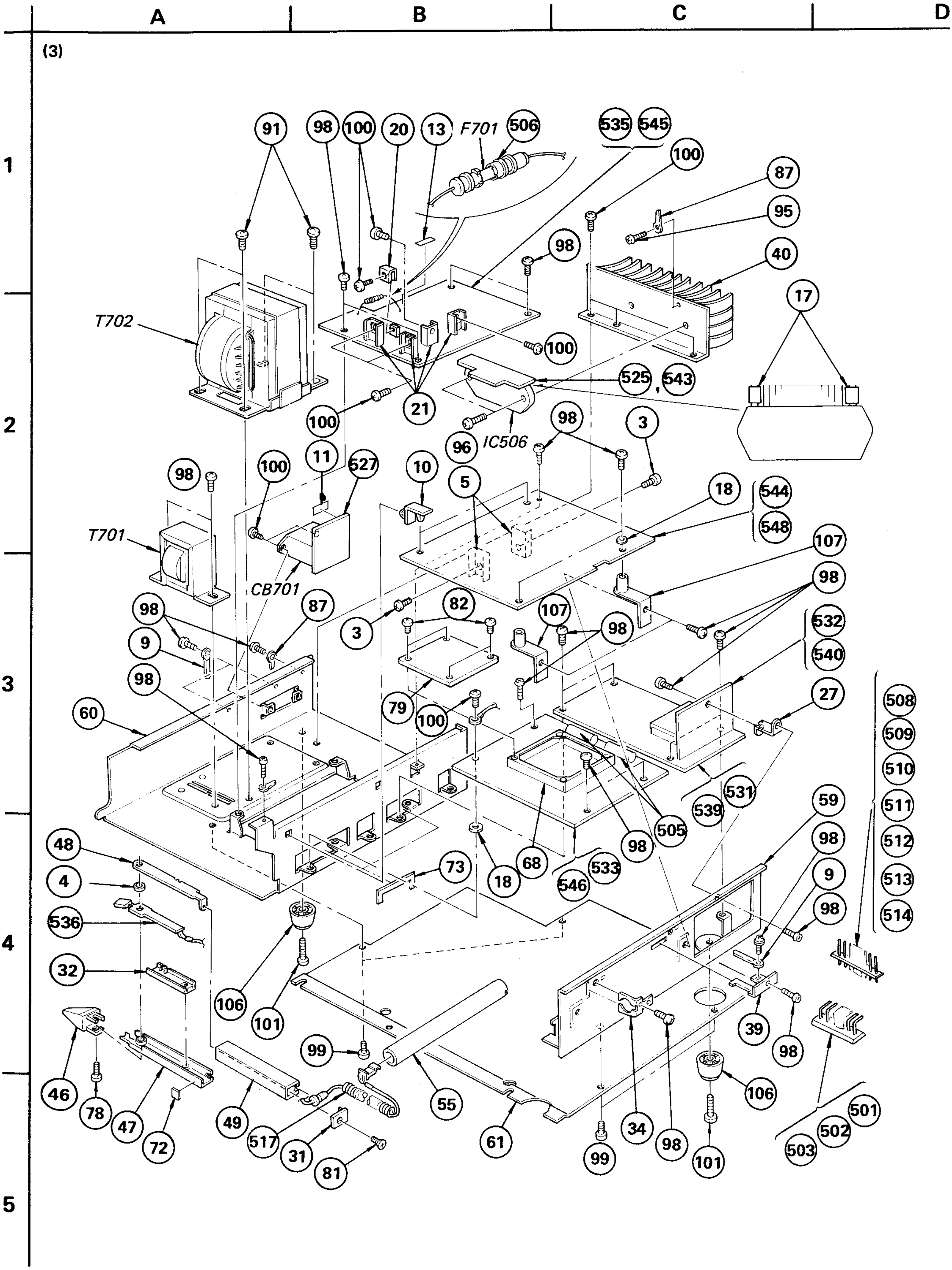
Note: Voltages are measured with a VOM (50kΩ/V).

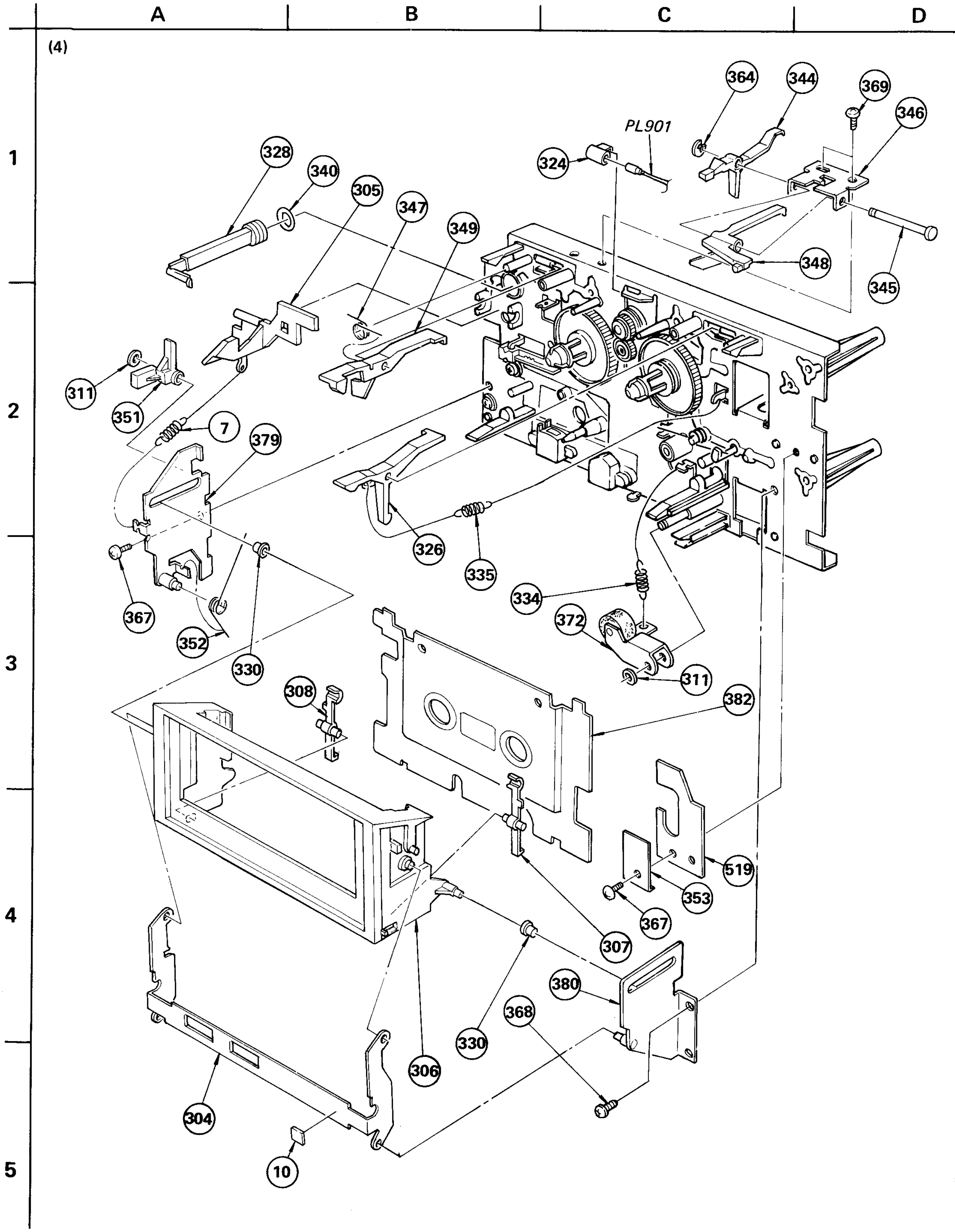
SECTION 5

EXPLODED VIEWS AND PARTS LIST

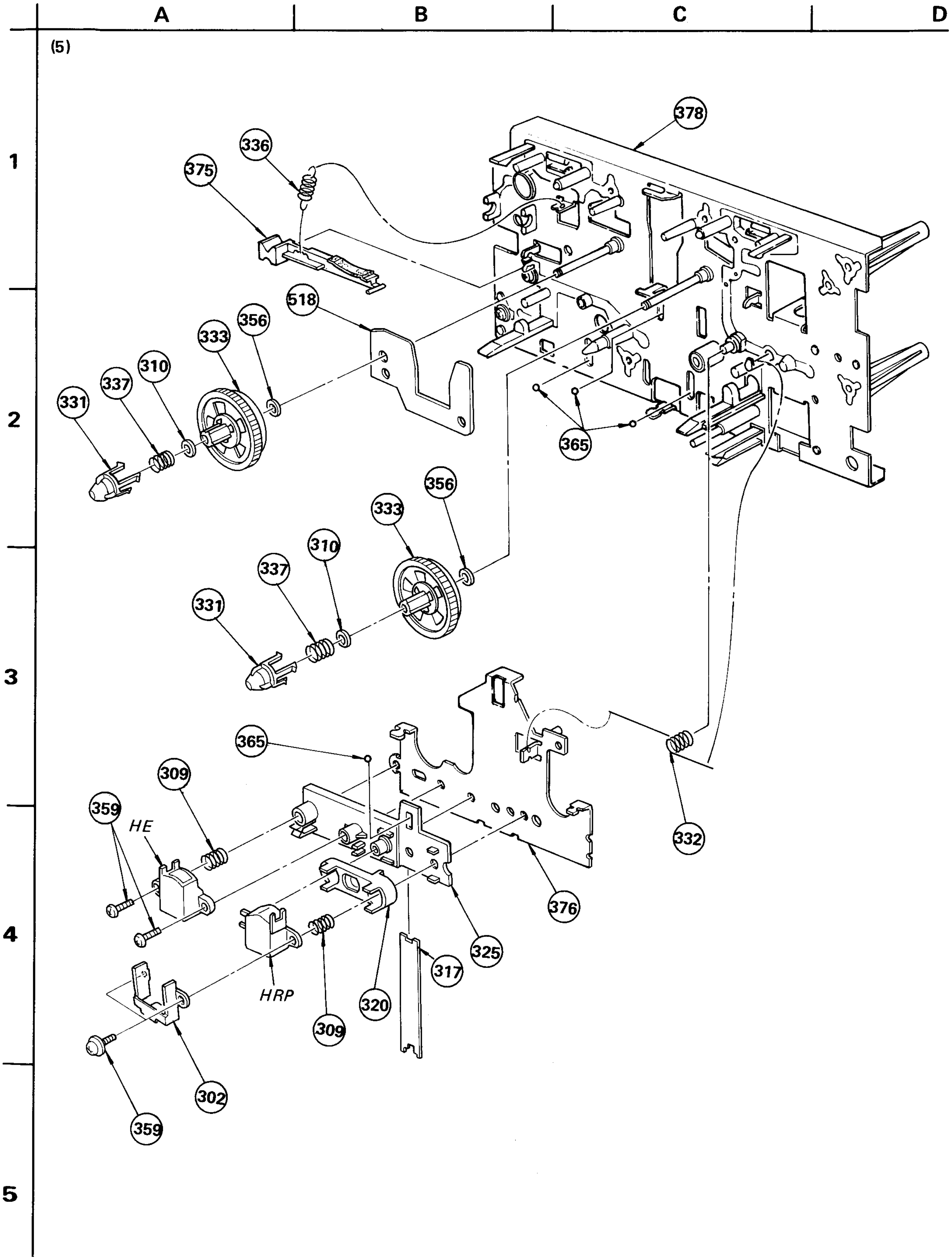

A
B
C
D
1
2
3
4
5
(1)
90
67
66
65
66
15
507
L52
98
111
102
98
111
102
77
67
90
102
94
114
116
99
22
82
94
516
99
515
103
98
537
S701
S302
98
CNJ507
J502
S301
CNJ506
82
94
86
75
62
526
524
547
16
14
99
98
98
103
98
99
53
52
99
54
99
94
94

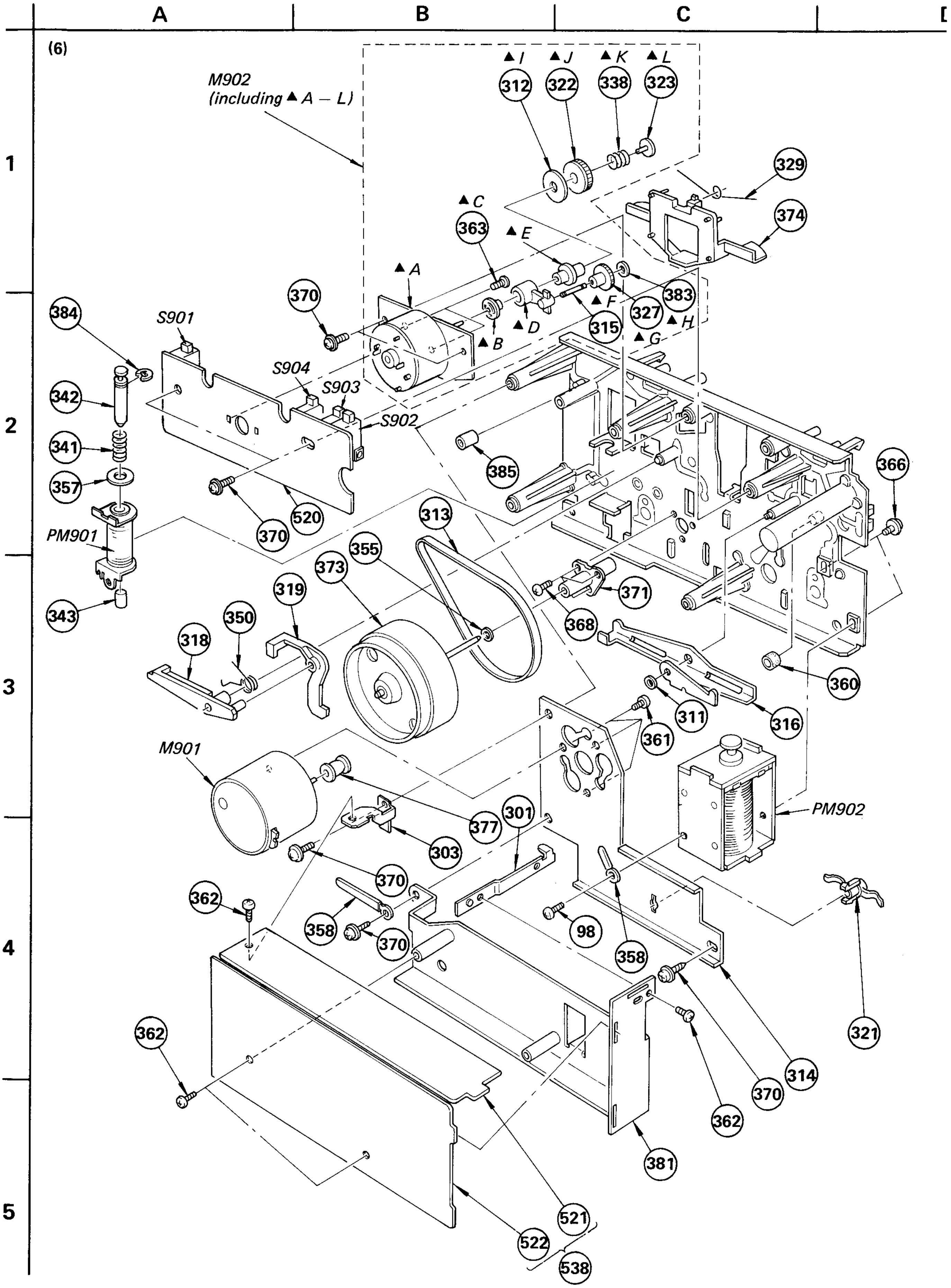

A
B
C
1
2
3
4
5
(2)
25
26
94
7
113
30
102
71
85
88
69
29
85
99
33
110
38
41
38
109
50
● A
94
89
94
523
89
93
57
58
44
94
(See page 114 – 116)
51
● B
112
(including ● A, B)
94
528
541
RV503
RV502
98
2
108
93
104
98
23
63
64
Supplied with variable resistor.
RV504
98
6
8
Supplied with variable resistor.
56
43
Supplied with variable resistor.
74
93
76
98
42
76
RV301, 401
S601
RV501
92
534
542
24
504
98
80
Supplied with jack.
98
84
35
28
36
J501
530
98
101
106
105
45
37
529


A
B
C
D
(3)
F701
T702
525, 543
IC506
T701
CB701


A
B
C
D
(4)
PL901

(5)


A
B
C
D
HE
HRP


A
B
C
D
(6)
M902
(including ▲A – L)
▲I
▲J
▲K
▲L
▲C
▲E
▲A
▲F
▲D
▲B
▲H
▲G
S901
S904
S903
S902
PM901
M901
PM902

GENERAL SECTION

No.	Part No.	Description
1	....	
2	♠;2-095-203-00	SHEET, CUSHION
3	2-259-121-00	SCREW, TR
4	2-832-007-00	BUSHING (K), INSULATING
5	♠;3-567-242-00	HEAT SINK
6	3-575-360-00	RING, O
7	3-575-364-00	SPRING, TENSION
8	♠;3-577-675-00	SPACER, CONTROL, REC CAL
9	♠;3-701-822-00	HOLDER, WIRE
10	♠;3-701-832-00	HINGE, CIRCUIT BOARD
11	♠;3-701-946-11	LABEL, FUSE
12	....	
13	♠;3-701-948-12	LABEL, FUSE
14	3-701-993-00	SPACER, TERMINAL
15	3-703-244-00	BUSHING, CORD
16	3-706-165-00	SCREW
17	3-886-569-00	TUBE, RUBBER
18	4-830-092-00	WASHER, FIBER
19	....	
20	♠;4-866-080-00	HEAT SINK
21	♠;4-866-647-00	HEAT SINK
22	♠;4-879-486-00	HOLDER, JACK
23	♠;4-883-404-00	BRACKET (LEFT), FL TUBE
24	♠;4-883-405-00	BRACKET (RIGHT), FL TUBE
25	♠;4-883-408-00	HOLDER, EJECT
26	♠;4-883-409-00	LEVER, EJECT
27	♠;4-883-410-00	BRACKET, AMPLIFIER PLATE
28	♠;4-883-411-00	BRACKET, HP JACK
29	4-883-412-00	FILTER, INDICATION TUBE
30	4-883-413-00	BUTTON, EJECT
31	4-883-416-00	PLATE, BOTTOM, BC
32	♠;4-883-417-00	PLATE, SHIELD, BC
33	4-883-418-00	HINGE (A), DOOR
34	♠;4-883-420-00	BRACKET (A), SLEEVE
35	4-883-421-00	HOLDER, BC PEN
36	4-883-422-00	PLATE, ORNAMENTAL, BC
37	4-883-424-00	KNOB (A), PUSH
38	4-883-427-00	SCREW, WINDOW, INDICATION TUBE
39	♠;4-883-428-00	BRACKET (B), SLEEVE
40	♠;4-883-430-00	HEAT SINK
41	4-883-431-00	WINDOW, INDICATION TUBE
42	4-883-432-00	KNOB, CONTROL (BASS, TREBLE)
43	4-883-432-11	KNOB, CONTROL (BALANCE)
44	♠;4-883-435-00	HINGE (C), BUTTON
45	4-883-436-00	KNOB, CONTROL, MASTER

GENERAL SECTION

No.	Part No.	Description
46	4-883-437-00	HEAD, BC
47	♠;4-883-438-00	PLATE (A), SIDE, BC
48	♠;4-883-439-00	PLATE (B), SIDE, BC
49	4-883-440-00	COVER, BC
50	4-883-441-00	ORNAMENT (LEFT), CONTROL BUTTON
51	4-883-442-00	ORNAMENT(RIGHT), CONTROL BUTTON
52	♠;4-883-443-01	RAIL, CARD
53	♠;4-883-443-11	RAIL, CARD
54	♠;4-883-444-00	COVER, CARD
55	♠;4-883-446-00	SLEEVE
56	♠;4-883-447-00	BRACKET, SWITCH
57	♠;4-883-450-00	HINGE (A), BUTTON
58	4-883-451-00	HINGE (B), BUTTON
59	♠;4-883-455-00	PLATE, SIDE, RIGHT
60	♠;4-883-457-00	PLATE, SIDE, LEFT
61	♠;4-883-459-00	PLATE, BOTTOM
62	4-883-462-11	PLATE, JACK
63	4-883-463-00	KNOB (LEFT), REC CONTROL
64	4-883-464-00	KNOB (RIGHT), REC CONTROL
65	4-883-465-00	CASE
66	4-883-466-00	PLATE, ORNAMENTAL, CASE
67	♠;4-883-467-00	SPACER, CASE
68	♠;4-883-468-00	PLATE(A), SHIELD, MICRO COMPUTER
69	♠;4-883-470-00	SPACER, FILTER
70	♠;4-883-473-00	SPACER, CASSETTE LID
71	♠;4-883-474-00	SHEET, WINDOW, INDICATION TUBE
72	♠;4-883-475-00	SPACER, BC
73	♠;4-883-476-01	COVER, EDGE
74	♠;4-883-476-11	COVER, EDGE
75	4-883-477-00	LABEL, MODEL NUMBER (AEP1)
76	♠;4-883-478-00	GUIDE, CONTROL
77	4-883-479-00	SHEET, INSTRUCTION, PICK
78	4-883-480-00	SCREW, HEAD, BD
79	4-883-481-00	PLATE (A), SHIELD
80	♠;4-883-482-00	GUIDE, TUBE, INDICATION
81	7-621-555-30	SCREW +K 2X5
82	7-621-775-10	SCREW +B 2.6X4
83	....	
84	7-621-775-60	SCREW +B 2.6X12
85	7-622-305-01	N 2, TYPE 3
86	7-623-422-07	LW 3, TYPE B
87	7-623-508-01	LUG, 3
88	7-682-245-04	SCREW +K 3X4
89	7-682-545-09	SCREW +B 3X4
90	7-682-561-04	SCREW +B 4X8

NOTE:

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

GENERAL SECTION

No.	Part No.	Description
91	7-682-961-01	SCREW +PSW 4X8
92	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S
93	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
94	7-685-546-19	SCREW +BTP 3X8 TYPE2 N-S
95	7-685-645-21	SCREW +BVTP 3X6 TYPE2 SLIT
96	7-685-650-11	SCREW +BVTP 3X16 TYPE2 N-S
97	....	
98	7-685-871-01	SCREW +BVTT 3X6 (S)
99	7-685-871-09	SCREW +BVTT 3X6 (S)
100	7-685-872-01	SCREW +BVTT 3X8 (S)
101	7-685-876-01	SCREW +BVTT 3X16 (S)
102	9-911-837-XX	CUSHION, FILTER
103	9-911-840-XX	RUBBER (B)
104	9-911-846-XX	CUSHION
105	9-911-863-XX	INSULATOR, CONTROL
106	X-4838-902-X	FOOT ASSY, 18MF
107	♠;X-4883-401-0	BRACKET ASSY, AUDIO PC BOARD
108	♠;X-4883-402-0	BRACKET ASSY, AMPLIFIER CHASSIS
109	X-4883-403-1	DOOR ASSY, FUNCTION
110	X-4883-404-1	PLATE ASSY, WINDOW, CASSETTE
111	7-624-190-31	STOP RING 4, TYPE-CS
112	X-4883-406-1	PANEL ASSY, CONTROL
113	X-4883-408-1	PANEL ASSY, FRONT
114	7-682-546-09	SCREW +B 3X5
115	7-685-545-19	SCREW +BTP 3X6
116	♠;3-703-456-01	LABEL, AMS LICENSE

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
151	3-701-630-00	BAG, POLYETHYLENE
152	3-773-005-11	MANUAL, INSTRUCTION
153	4-880-211-00	SHEET, PROTECTION
154	4-883-402-00	CUSHION (A)
155	4-883-403-00	CUSHION (B)
156	4-883-483-00	INDIVIDUAL CARTON
157	4-883-484-00	SHEET, PROTECTION
158	7-621-775-10	SCREW +B 2.6X4
159	A-4382-124-A	SHEET (B) ASSY, BAR CORD
160	A-4382-125-A	SHEET (C) ASSY, BAR CORD
161	X-3701-105-0	ROD ASSY, CLEANING, HEAD
162	4-883-485-00	SPACER
163	4-883-486-00	SHEET

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MECHANISM SECTION

No.	Part No.	Description
301	♠;3-306-201-00	BRACKET (B), SYSTEM CONTROL
302	3-306-203-00	PLATE (C), SHIELD, HEAD
303	♠;3-306-204-00	BRACKET (C), SYSTEM CONTROL
304	♠;3-306-205-00	ARM, HOLDER FULCRUM
305	3-306-206-00	LEVER, LOCK
306	3-306-207-00	HOLDER, CASSETTE
307	3-306-210-00	SPRING (RIGHT)
308	3-306-211-00	SPRING (LEFT)
309	3-481-272-00	SPRING, COMPRESSION
310	3-558-708-11	WASHER, STOPPER
311	3-558-708-21	WASHER, STOPPER
312	3-564-027-11	FELT, LIMITER
313	3-564-319-00	BELT, CAPSTAN
314	♠;3-575-302-00	RETAINER, THRUST
315	3-575-304-00	SHAFT, GEAR, FR
316	♠;3-575-307-00	LEVER, FWD
317	♠;3-575-312-00	SPRING
318	3-575-317-02	LEVER, TUNING
319	3-575-318-00	LEVER, LOCK, TUNING
320	3-575-320-00	BASE, ADJUSTMENT, HEAD
321	3-575-321-00	RETAINER, THRUST, CAPSTAN
322	3-575-324-00	GEAR, LIMITER
323	3-575-327-00	STOPPER
324	3-575-328-00	HOLDER, LAMP
325	3-575-330-00	BRACKET, HEAD
326	♠;3-575-331-00	LEVER, DETECTION, HALF
327	3-575-332-00	GEAR, FR
328	3-575-333-00	PISTON
329	3-575-345-00	SPRING
330	3-575-348-00	ROLLER, GUIDE, THREADING
331	3-575-350-00	CLAW, REEL TABLE
332	3-575-351-00	SPRING
333	3-575-353-00	TABLE, REEL
334	3-575-357-00	SPRING, TENSION
335	3-575-358-00	SPRING, TENSION
336	3-575-359-00	SPRING, TENSION
337	3-575-365-00	SPRING, COMPRESSION
338	3-575-368-00	SPRING, COMPRESSION
339	....	
340	3-575-392-00	RING, PISTON
341	3-575-414-00	SPRING, COMPRESSION
342	3-575-415-11	ARBOR, MOVABLE
343	3-575-416-11	ARBOR, FIXED
344	3-575-438-00	LEVER, DETECTION
345	♠;3-575-439-00	SHAFT, LEVER, DETECTION
346	♠;3-575-440-00	BRACKET, LEVER, DETECTION
347	3-575-441-00	SPRING
348	3-575-446-00	LEVER, DETECTION, METAL
349	3-575-449-00	LEVER, DETECTION, REC
350	3-575-458-00	SPRING
351	♠;3-575-495-00	LEVER, LOCK RELEASE
352	3-575-499-00	SPRING
353	♠;3-575-728-00	SPRING, LEAF
354	....	
355	3-701-438-21	WASHER
356	3-701-439-21	WASHER
357	3-701-444-11	WASHER, 6
358	♠;3-701-822-00	HOLDER, WIRE
359	3-703-496-00	SCREW + PWH2X14
360	4-855-109-01	RUBBER, LIFTER CUSHION
361	7-621-259-15	SCREW +P 2.6X3
362	7-621-759-45	+PSW, 2.6X6
363	7-621-775-10	SCREW +B 2.6X4
364	7-624-104-04	STOP RING 2.0, TYPE -E
365	7-671-112-11	BALL, STEEL
366	7-682-949-01	SCREW +PSW 3X10
367	7-685-860-01	SCREW +BVTT 2.6X4 (S)
368	7-685-861-01	SCREW +BVTT 2.6X5 (S)
369	7-685-870-01	SCREW +BVTT 3X5 (S)
370	7-687-246-11	SCREW, TOTSU PTPWH 3X8, TYPE2
371	X-3575-303-0	METAL ASSY, CAPSTAN
372	X-3575-304-0	PINCH LEVER (T) ASSY
373	X-3575-305-0	FLYWHEEL (T) ASSY
374	X-3575-309-0	PLATE ASSY, BRAKE
375	X-3575-310-0	LEVER ASSY, TENSION, BACK
376	X-3575-324-0	CHASSIS ASSY, HEAD
377	X-3575-328-1	PULLEY, MOTOR
378	♠;X-3575-334-0	CHASSIS ASSY, MECHANICAL
379	♠;X-3575-350-0	PLATE (LEFT) ASSY, SIDE, HOLDER
380	♠;X-3575-351-0	PLATE (RIGHT)ASSY, SIDE, HOLDER
381	♠;X-3575-352-0	BRACKET ASSY, PC BOARD
382	X-3575-353-0	PLATE ASSY, ORNAMENTAL
383	3-558-708-01	WASHER, STOPPER
384	7-624-110-04	STOP, RING 5
385	3-538-051-00	RUBBER, BRAKE

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- MMH : mH, UH : μH

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ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	🌢;1-508-831-12	H TYPE BASE POST (4P)
502	🌢;1-508-832-12	H TYPE BASE POST (5P)
503	🌢;1-508-833-12	H TYPE BASE POST (6P)
504	1-519-260-00	INDICATOR TUBE, FLUORESCENT
505	1-528-097-00	BATTERY, STORAGE, NICKEL CADMIUM
506	1-533-102-XX	HOLDER, FUSE
507	⚠.1-534-817-XX	CORD, POWER
508	🌢;1-535-114-00	TERMINAL (1P)
509	🌢;1-535-115-00	TERMINAL (2P)
510	🌢;1-535-116-00	TERMINAL (3P)
511	🌢;1-535-117-00	TERMINAL (4P)
512	🌢;1-535-118-00	TERMINAL (5P)
513	🌢;1-535-119-00	TERMINAL (6P)
514	🌢;1-535-120-00	TERMINAL (7P)
515	1-536-627-00	TERMINAL BOARD 4P (SPEAKER)
516	1-536-733-00	TERMINAL BOARD, ANTENNA
517	1-556-374-00	CORD, CURL
518	🌢;1-603-823-00	PC BOARD, PHOTO
519	🌢;1-605-510-00	PC BOARD, THERMISTOR
520	🌢;1-607-459-00	PC BOARD, REEL MOTOR
521	🌢;1-607-460-00	PC BOARD, SYSTEM CONTROL A
522	🌢;1-607-461-00	PC BOARD, SYSTEM CONTROL B
523	🌢;1-607-544-00	PC BOARD, CONTROL SWITCH
524	🌢;1-607-603-00	PC BOARD, FUNCTION
525	🌢;1-607-604-00	PC BOARD, POWER AMP
526	🌢;1-607-606-00	PC BOARD, TYPE SW
527	🌢;1-607-607-00	PC BOARD, RELAY
528	🌢;1-607-608-00	PC BOARD, TONE
529	🌢;1-607-609-00	PC BOARD, VOLUME
530	🌢;1-607-610-00	PC BOARD, HEADPHONE
531	🌢;1-607-611-00	PC BOARD, FM
532	🌢;1-607-612-00	PC BOARD, AM
533	🌢;1-607-613-00	PC BOARD, MICRO COMPUTER
534	🌢;1-607-614-00	PC BOARD, INDICATOR
535	🌢;1-607-616-00	PC BOARD, POWER SUPPLY
536	🌢;1-607-902-00	PC BOARD, LEADER PEN
537	🌢;1-608-265-00	PC BOARD, SPEAKER TERMINAL
538	🌢;A-2019-142-A	MOUNTED PCB, SYSTEM CONTROL
539	🌢;A-4348-009-A	MOUNTED PCB, FM
540	🌢;A-4350-011-A	MOUNTED PCB, AM
541	🌢;A-4375-165-A	MOUNTED PCB, TONE
542	🌢;A-4380-043-A	MOUNTED PCB, INDICATOR
543	🌢;A-4388-326-A	MOUNTED PCB, POWER AMP
544	🌢;A-4393-021-A	MOUNTED PCB, RECORD/PLAYBACK
545	🌢;A-4394-291-A	MOUNTED PCB, POWER SUPPLY
546	🌢;A-4409-667-A	MOUNTED PCB, MICRO COMPUTER
547	🌢;A-4474-207-A	MOUNTED PCB, FUNCTION
548	🌢;1-607-543-00	PC BOARD, RECORD/PLAYBACK

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
BZ	1-529-016-00	BUZZER, PIEZOELECTRIC			
C25	1-161-315-00	CERAMIC	220PF	10%	50V
C51	1-104-095-00	POLYSTYRENE	0.0056MF	5%	50V
C55	1-104-069-00	POLYSTYRENE	470PF	5%	50V
C109	1-104-077-00	POLYSTYRENE	0.001MF	5%	50V
C304	1-107-167-00	MICA	75PF	5%	500V
C305	1-130-305-00	FILM	0.022MF	5%	100V
C307	1-123-230-00	ELECT	2.2MF	20%	50V
C308	1-123-230-00	ELECT	2.2MF	20%	50V
C319	1-130-623-00	FILM	0.018MF	5%	50V
C321	1-161-257-00	CERAMIC	6.8PF	10%	50V
C324	1-130-621-00	FILM	0.012MF	5%	50V
C326	1-130-620-00	FILM	0.01MF	5%	50V
C327	1-130-623-00	FILM	0.018MF	5%	50V
C328	1-130-624-00	FILM	0.022MF	5%	50V
C331	1-130-632-00	FILM	0.1MF	5%	50V
C332	1-130-620-00	FILM	0.01MF	5%	50V
C333	1-130-627-00	FILM	0.039MF	5%	50V
C335	1-130-629-00	FILM	0.056MF	5%	50V
C336	1-130-629-00	FILM	0.056MF	5%	50V
C337	1-130-625-00	FILM	0.027MF	5%	50V
C342	1-123-232-00	ELECT	4.7MF	20%	50V
C350	1-107-171-00	MICA	120PF	5%	500V
C355	1-107-181-00	MICA	330PF	5%	500V
C404	1-107-167-00	MICA	75PF	5%	500V
C405	1-130-305-00	FILM	0.022MF	5%	100V
C407	1-123-230-00	ELECT	2.2MF	20%	50V
C408	1-123-230-00	ELECT	2.2MF	20%	50V
C419	1-130-623-00	FILM	0.018MF	5%	50V
C421	1-161-257-00	CERAMIC	6.8PF	10%	50V
C424	1-130-621-00	FILM	0.012MF	5%	50V
C426	1-130-620-00	FILM	0.01MF	5%	50V
C427	1-130-623-00	FILM	0.018MF	5%	50V
C428	1-130-624-00	FILM	0.022MF	5%	50V
C431	1-130-632-00	FILM	0.1MF	5%	50V
C432	1-130-620-00	FILM	0.01MF	5%	50V
C433	1-130-627-00	FILM	0.039MF	5%	50V
C435	1-130-629-00	FILM	0.056MF	5%	50V
C436	1-130-629-00	FILM	0.056MF	5%	50V
C437	1-130-625-00	FILM	0.027MF	5%	50V
C442	1-123-232-00	ELECT	4.7MF	20%	50V
C450	1-107-171-00	MICA	120PF	5%	500V
C542	1-161-315-00	CERAMIC	220PF	10%	50V
C545	1-161-315-00	CERAMIC	220PF	10%	50V
C642	1-161-315-00	CERAMIC	220PF	10%	50V
C645	1-161-315-00	CERAMIC	220PF	10%	50V

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " 🌢 " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C705⚠.	1-123-324-00	ELECT	1000MF	20%	16V
C706⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C707⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C709⚠.	1-123-363-00	ELECT	470MF	20%	50V
C711⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C712⚠.	1-123-363-00	ELECT	470MF	20%	50V
C713⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C714⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C715⚠.	1-123-324-00	ELECT	1000MF	20%	50V
C717⚠.	1-123-338-00	ELECT	2200MF	20%	25V
C718⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C719⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C724⚠.	1-123-338-00	ELECT	2200MF	20%	25V
C725⚠.	1-123-338-00	ELECT	2200MF	20%	25V
C726⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C727⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C728⚠.	1-125-292-11	ELECT(BLOCK)	8200MF	20%	42V
C729⚠.	1-125-292-11	ELECT(BLOCK)	8200MF	20%	42V
C730⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C731⚠.	1-101-005-00	CERAMIC	0.022MF		50V
C733⚠.	1-161-744-00	CERAMIC	0.01MF		400V
C801	1-130-624-00	FILM	0.022MF	5%	50V
C802	1-130-626-00	FILM	0.033MF	5%	50V
C807	1-130-624-00	FILM	0.022MF	5%	50V
C808	1-130-624-00	FILM	0.022MF	5%	50V
C857	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C865	1-130-624-00	FILM	0.022MF	5%	50V
C867	1-130-632-00	FILM	0.1MF	5%	50V
C868	1-161-315-00	CERAMIC	220PF	10%	50V
C869	1-161-315-00	CERAMIC	220PF	10%	50V
C870	1-161-315-00	CERAMIC	220PF	10%	50V
C873	1-161-315-00	CERAMIC	220PF	10%	50V
C892	1-130-628-00	FILM	0.047MF	5%	50V
C909	1-123-333-00	ELECT	100MF	20%	25V
C910	1-130-635-00	FILM	0.18MF	5%	50V
CB501	1-532-657-00	BREAKER, CIRCUIT			
CB601	1-532-657-00	BREAKER, CIRCUIT			
CB701⚠.	1-515-421-00	RELAY			
CB702⚠.	1-532-541-00	CIRCUIT BREAKER			
CF1	1-527-344-91	FILTER, CERAMIC			
CF2	1-527-344-91	FILTER, CERAMIC			
CF3	1-527-344-91	FILTER, CERAMIC			
CF4	1-527-344-91	FILTER, CERAMIC			
CF51	1-527-966-00	FILTER, CERAMIC			
CF52	1-527-817-00	FILTER, CERAMIC			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CF201	1-527-731-00	OSCILLATOR, CRYSTAL
CF851	1-527-647-00	OSCILLATOR, CRYSTAL
CNJ2 ♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ3 ♠;	1-560-338-00	PIN, CONNECTOR 7P
CNJ4 ♠;	1-560-061-00	PIN, CONNECTOR 3P
CNJ5 ♠;	1-560-062-00	PIN, CONNECTOR 4P
CNJ11♠;	1-560-338-00	PIN, CONNECTOR 7P
CNJ12♠;	1-560-597-00	PIN, CONNECTOR 3P
CNJ13♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ14♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ15♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ16♠;	1-560-061-00	PIN, CONNECTOR 3P
CNJ17♠;	1-560-062-00	PIN, CONNECTOR 4P
CNJ18♠;	1-560-230-00	PIN, CONNECTOR 12P
CNJ19♠;	1-560-338-00	PIN, CONNECTOR 7P
CNJ20♠;	1-560-062-00	PIN, CONNECTOR 4P
CNJ21♠;	1-560-339-00	PIN, CONNECTOR 9P
CNJ22♠;	1-560-064-00	PIN, CONNECTOR 6P
CNJ23♠;	1-560-066-00	PIN, CONNECTOR 10P
CNJ24♠;	1-560-062-00	PIN, CONNECTOR 4P
CNJ25♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ26♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ27♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ28♠;	1-560-063-00	PIN, CONNECTOR 5P
CNJ29♠;	1-560-064-00	PIN, CONNECTOR 6P
CNJ30♠;	1-560-061-00	PIN, CONNECTOR 3P
CNJ31♠;	1-560-060-00	PIN, CONNECTOR 2P
CNJ32♠;	1-560-597-00	PIN, CONNECTOR 3P
CNJ50♠;	1-560-060-00	PIN, CONNECTOR 2P
CNJ51♠;	1-560-072-00	PIN, CONNECTOR (U TYPE)
CNJ52♠;	1-560-074-00	PIN, CONNECTOR
CNJ53♠;	1-560-072-00	PIN, CONNECTOR (U TYPE)
CNJ60♠;	1-560-060-00	PIN, CONNECTOR 2P
CNJ61♠;	1-508-878-00	BASE POST
CNJ62♠;	1-508-878-00	BASE POST
CNJ63♠;	1-508-879-00	BASE POST
CNJ64♠;	1-560-061-00	PIN, CONNECTOR 3P
CNJ65♠;	1-560-060-00	PIN, CONNECTOR 2P
CNJ66♠;	1-560-061-00	PIN, CONNECTOR 3P
CNJ67♠;	1-560-070-00	BASE POST
♠CNJ301;	1-560-061-00	PIN, CONNECTOR 3P
♠CNJ302;	1-560-061-00	PIN, CONNECTOR 3P
♠CNJ303;	1-560-060-00	PIN, CONNECTOR 2P
♠CNJ304;	1-560-061-00	PIN, CONNECTOR 3P

NOTE:

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CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
●CNJ305;	1-560-060-00	PIN, CONNECTOR 2P
●CNJ306;	1-560-061-00	PIN, CONNECTOR 3P
●CNJ307;	1-560-061-00	PIN, CONNECTOR 3P
●CNJ308;	1-560-061-00	PIN, CONNECTOR 3P
●CNJ309;	1-560-064-00	PIN, CONNECTOR 6P
●CNJ310;	1-560-061-00	PIN, CONNECTOR 3P
●CNJ311;	1-560-062-00	PIN, CONNECTOR 4P
●CNJ312;	1-560-063-00	PIN, CONNECTOR 5P
●CNJ313;	1-560-062-00	PIN, CONNECTOR 4P
CNJ506	1-507-734-00	JACK, PIN 4P
CNJ507	1-507-746-21	JACK, PIN 6P
●CNJ701;	1-560-063-00	PIN, CONNECTOR 5P
●CNJ702;	1-560-063-00	PIN, CONNECTOR 5P
●CNJ901;	1-560-076-00	PIN, CONNECTOR (U TYPE) 8P
●CNJ902;	1-560-072-00	PIN, CONNECTOR (U TYPE) 3P
●CNJ903;	1-560-846-00	PIN, CONNECTOR (U TYPE) 12P
●CNJ904;	1-560-074-00	PIN, CONNECTOR (U TYPE) 5P
●CNJ905;	1-560-075-00	PIN, CONNECTOR (U TYPE) 6P
●CNJ906;	1-560-074-00	PIN, CONNECTOR (U TYPE) 5P
●CNJ907;	1-560-075-00	PIN, CONNECTOR (U TYPE) 6P
●CNJ908;	1-560-061-00	PIN, CONNECTOR 3P
●CNJ909;	1-560-066-00	PIN, CONNECTOR 10P
CT51	1-141-181-11	CAP, TRIMMER
CT52	1-141-179-12	CAP, TRIMMER
CT302	1-141-225-00	CAP, TUNING, TRIMAR
CT402	1-141-225-00	CAP, TUNING, TRIMAR
CT851	1-141-227-00	TRIMAR, CERAMIC
D1	8-719-815-55	DIODE 1S1555
D2	8-719-103-61	DIODE RD15J-N2
D3	8-719-815-55	DIODE 1S1555
D4	8-719-815-55	DIODE 1S1555
D5	8-719-815-55	DIODE 1S1555
D51	8-719-912-27	DIODE KV1226
D52	8-719-815-55	DIODE 1S1555
D53	8-719-815-55	DIODE 1S1555
D54	8-719-815-55	DIODE 1S1555
D201	8-719-815-55	DIODE 1S1555
D202	8-719-815-55	DIODE 1S1555
D203	8-719-815-55	DIODE 1S1555
D204	8-719-815-55	DIODE 1S1555
D205	8-719-815-55	DIODE 1S1555
D206	8-719-815-55	DIODE 1S1555
D207	8-719-815-55	DIODE 1S1555
D208	8-719-815-55	DIODE 1S1555

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D209	8-719-815-55	DIODE 1S1555
D210	8-719-815-55	DIODE 1S1555
D211	8-719-815-55	DIODE 1S1555
D212	8-719-815-55	DIODE 1S1555
D301	8-719-815-55	DIODE 1S1555
D302	8-719-815-55	DIODE 1S1555
D304	8-719-815-55	DIODE 1S1555
D305	8-719-815-55	DIODE 1S1555
D306	8-719-815-55	DIODE 1S1555
D307	8-719-815-55	DIODE 1S1555
D308	8-719-815-55	DIODE 1S1555
D309	8-719-815-55	DIODE 1S1555
D310	8-719-103-31	DIODE RD5.6J-N2
D311	8-719-103-31	DIODE RD5.6J-N2
D312	8-719-815-55	DIODE 1S1555
D402	8-719-815-55	DIODE 1S1555
D501	8-719-815-55	DIODE 1S1555
D502	8-719-815-55	DIODE 1S1555
D503	8-719-815-55	DIODE 1S1555
D504	8-719-103-31	DIODE RD5.6J-N2
D505	8-719-103-31	DIODE RD5.6J-N2
D506	8-719-103-61	DIODE RD15J-N2
D507	8-719-815-55	DIODE 1S1555
D701	8-719-103-36	DIODE RD6.8J-N1
D702	8-719-103-75	DIODE RD24J-N1
D703	⚠.8-719-500-04	DIODE S1WB40
D704	⚠.8-719-500-04	DIODE S1WB40
D705	⚠.8-719-500-04	DIODE S1WB40
D706	⚠.8-719-500-04	DIODE S1WB40
D707	8-719-200-02	DIODE 10E-2
D708	⚠.8-719-500-04	DIODE S1WB40
D709	8-719-103-61	DIODE RD15J-N2
D710	8-719-103-61	DIODE RD15J-N2
D711	8-719-504-02	DIODE D4BB20
D712	8-719-160-25	DIODE RD5.6F-B1
D713	8-719-103-43	DIODE RD8.2J-N2
D715	8-719-200-02	DIODE 10E-2
D720	8-719-200-02	DIODE 10E-2
D721	8-719-200-02	DIODE 10E-2
D801	8-719-911-19	DIODE 1SS119
D802	8-719-911-19	DIODE 1SS119
D803	8-719-911-19	DIODE 1SS119
D804	8-719-911-19	DIODE 1SS119
D806	8-719-911-19	DIODE 1SS119
D807	8-719-911-19	DIODE 1SS119

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CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D808	8-719-911-19	DIODE 1SS119
D809	8-719-911-19	DIODE 1SS119
D810	8-719-911-19	DIODE 1SS119
D811	8-719-911-19	DIODE 1SS119
D812	8-719-911-19	DIODE 1SS119
D813	8-719-911-19	DIODE 1SS119
D814	8-719-911-19	DIODE 1SS119
D860	8-719-815-55	DIODE 1S1555
D861	8-719-815-55	DIODE 1S1555
D862	8-719-815-55	DIODE 1S1555
D863	8-719-815-55	DIODE 1S1555
D864	8-719-815-55	DIODE 1S1555
D865	8-719-815-55	DIODE 1S1555
D871	8-719-911-19	DIODE 1SS119
D872	8-719-911-19	DIODE 1SS119
D873	8-719-911-19	DIODE 1SS119
D874	8-719-911-19	DIODE 1SS119
D875	8-719-911-19	DIODE 1SS119
D876	8-719-911-19	DIODE 1SS119
D877	8-719-200-02	DIODE 10E-2
D878	8-719-200-08	DIODE 11DQ03
D879	8-719-200-02	DIODE 10E-2
D881	8-719-921-12	DIODE HZ2BLL
D882	8-719-914-11	DIODE HZ4ALL
D883	8-719-900-80	DIODE HP80
D884	8-719-900-80	DIODE HP80
D901	8-719-815-55	DIODE 1S1555
D903	8-719-902-93	DIODE LT8003N
D904	8-719-815-55	DIODE 1S1555
D905	8-719-815-55	DIODE 1S1555
D906	8-719-815-55	DIODE 1S1555
D907	8-719-815-55	DIODE 1S1555
D908	8-719-815-55	DIODE 1S1555
D909	8-719-200-02	DIODE 10E-2
D910	8-719-815-55	DIODE 1S1555
D911	8-719-902-77	DIODE SLR34PC5
D912	8-719-902-78	DIODE SLR34DC5
D913	8-719-934-05	DIODE SLR-34URC5
D951	8-719-815-55	DIODE 1S1555
D952	8-719-815-55	DIODE 1S1555
D953	8-719-815-55	DIODE 1S1555
D954	8-719-815-55	DIODE 1S1555
D955	8-719-815-55	DIODE 1S1555
D981	8-719-200-02	DIODE 10E-2
D982	8-719-815-55	DIODE 1S1555
D983	8-719-815-55	DIODE 1S1555

ELECTRICAL PARTS

Ref.No.	Part No.	Description
F701	1-532-284-00	FUSE, TIME-LAG, 250V 630MA
FE1	1-463-365-00	FRONT END
HE	8-825-724-00	HEAD, ERASE EF-201-36
HRP	8-825-732-00	HEAD, REC/PB PS210-3602A
IC1	8-759-812-35	IC LA1235
IC51	8-759-812-45	IC LA1245
IC101	8-759-833-90	IC LA3390
IC201	8-759-617-78	IC CX-778A
IC202	8-759-157-41	IC UPC574J-G
IC301	8-759-700-05	IC NJM2043S-D
IC302	8-759-600-02	IC M5218L
IC303	8-759-300-74	IC CX-174A
IC401	8-759-700-05	IC NJM2043S-D
IC402	8-759-600-02	IC M5218L
IC403	8-759-300-74	IC CX-174A
IC501	8-759-600-02	IC M5218L
IC502	8-759-307-70	IC CX-770A
IC503	8-759-307-70	IC CX-770A
IC504	8-759-600-02	IC M5218L
IC505	8-759-600-02	IC M5218L
IC506	8-749-946-50	IC STK-465A
IC507	8-759-961-38	IC BA6138
IC508	8-759-600-02	IC M5218L
IC509	8-759-800-03	IC LC4066B
IC510	8-759-600-02	IC M5218L
IC801	8-759-905-48	IC MSL9512RS
IC802	8-759-905-48	IC MSL9512RS
IC803	8-759-904-72	IC MSL9359RS
IC804	8-759-812-90	IC LB1290
IC851	8-759-905-72	IC MB8847-624
IC852	8-759-905-95	IC MB88401-167M
IC853	8-759-905-49	IC MSL9513RS
IC854	8-759-905-49	IC MSL9513RS
IC855	8-759-240-69	IC TC4069UBP
IC856	8-759-240-49	IC TC4049BP
IC857	8-759-240-50	IC TC4050BP
IC858	8-759-240-01	IC TC4001BP
IC859	8-759-700-08	IC NJM4558S
IC860	8-759-800-03	IC LC4066B
IC861	8-759-812-90	IC LB1290
IC901	8-759-900-71	IC MSM58361RS
IC902	8-759-240-81	IC TC4081BP
IFT51	1-404-326-00	TRANSFORMER, IF

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- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
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SEMICONDUCTORS

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ELECTRICAL PARTS

Ref.No.	Part No.	Description
J501	1-507-791-00	JACK, LARGE TYPE (HEADPHONES)
J502	1-507-688-21	JACK (STEREO PLUG) (SYNC PLAY)
L1	1-407-169-XX	MICRO INDUCTOR 100UH
L2	1-407-169-XX	MICRO INDUCTOR 100UH
L51	1-408-195-00	MICRO INDUCTOR 100UH
L52	1-402-007-	ANTENNA, FERRITE-ROD (MW)
L53	1-405-927-00	COIL, MW OSC
L54	1-408-183-00	MICRO INDUCTOR 10UH
L101	1-235-085-00	FILTER, LOW PASS
L102	1-235-085-00	FILTER, LOW PASS
L103	1-235-086-00	FILTER, LOW PASS
L104	1-235-086-00	FILTER, LOW PASS
L201	1-407-169-XX	MICRO INDUCTOR 100UH
L202	1-407-169-XX	MICRO INDUCTOR 100UH
L301	1-408-262-00	MICRO INDUCTOR 27MMH
L401	1-408-262-00	MICRO INDUCTOR 27MMH
L501	●;1-420-872-00	COIL, AIR CORE
L601	●;1-420-872-00	COIL, AIR CORE
L801	1-407-169-XX	MICRO INDUCTOR 100UH
L851	1-408-195-00	MICRO INDUCTOR 100UH
L852	1-408-195-00	MICRO INDUCTOR 100UH
L853	1-408-195-00	MICRO INDUCTOR 100UH
L901	1-407-167-XX	MICRO INDUCTOR 68UH
L902	1-407-167-XX	MICRO INDUCTOR 68UH
LPF1	1-231-657-00	FILTER, LOWPASS
LPF301	1-231-388-00	FILTER, LOWPASS
LPF401	1-231-388-00	FILTER, LOWPASS
M901	8-835-049-01	MOTOR, DC (DNE-4100A)
M902	X-3575-348-0	MOTOR ASSY, REEL
PL901	1-518-306-00	LAMP, PILOT
PM901	1-454-291-00	SOLENOID, PLUNGER (AMS)
PM902	1-454-301-00	SOLENOID, PLUNGER (HEAD)
Q1	8-729-671-14	TRANSISTOR 2SC710-14
Q2	8-729-671-14	TRANSISTOR 2SC710-14
Q3	8-729-671-14	TRANSISTOR 2SC710-14
Q4	8-729-671-14	TRANSISTOR 2SC710-14
Q5	8-729-671-14	TRANSISTOR 2SC710-14
Q51	8-729-663-47	TRANSISTOR 2SC1364
Q52	8-729-663-47	TRANSISTOR 2SC1364
Q101	8-729-663-47	TRANSISTOR 2SC1364
Q102	8-729-663-47	TRANSISTOR 2SC1364
Q201	8-729-663-47	TRANSISTOR 2SC1364
Q202	8-729-663-47	TRANSISTOR 2SC1364
Q203	8-729-663-47	TRANSISTOR 2SC1364

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q204	8-729-663-47	TRANSISTOR 2SC1364
Q205	8-729-224-61	TRANSISTOR 2SK246
Q206	8-729-823-64	TRANSISTOR 2SC2362
Q207	8-729-141-43	TRANSISTOR 2SD414
Q208	8-729-224-61	TRANSISTOR 2SK246
Q301	8-729-606-32	TRANSISTOR 2SC2603
Q302	8-729-201-05	TRANSISTOR 2SC2878-B
Q303	8-729-201-05	TRANSISTOR 2SC2878-B
Q304	8-729-201-05	TRANSISTOR 2SC2878-B
Q305	8-729-201-05	TRANSISTOR 2SC2878-B
Q306	8-729-606-32	TRANSISTOR 2SC2603
Q307	8-729-100-13	TRANSISTOR 2SC2001
Q308	8-729-663-47	TRANSISTOR 2SC1364
Q310	8-729-663-47	TRANSISTOR 2SC1364
Q312	8-729-663-47	TRANSISTOR 2SC1364
Q313	8-729-201-05	TRANSISTOR 2SC2878-B
Q314	8-729-606-32	TRANSISTOR 2SC2603
Q315	8-729-663-47	TRANSISTOR 2SC1364
Q316	8-729-663-47	TRANSISTOR 2SC1364
Q317	8-729-201-52	TRANSISTOR 2SA1015
Q318	8-729-141-43	TRANSISTOR 2SD414
Q319	8-729-315-22	TRANSISTOR 2SD1152
Q320	8-729-315-22	TRANSISTOR 2SD1152
Q321	8-729-384-48	TRANSISTOR 2SA844
Q322	8-729-154-83	TRANSISTOR 2SB548
Q323	8-729-384-48	TRANSISTOR 2SA844
Q324	8-769-111-00	TRANSISTOR 2SK120
Q325	8-769-111-00	TRANSISTOR 2SK120
Q330	8-729-663-47	TRANSISTOR 2SC1364
Q401	8-729-606-32	TRANSISTOR 2SC2603
Q402	8-729-201-05	TRANSISTOR 2SC2878-B
Q403	8-729-201-05	TRANSISTOR 2SC2878-B
Q404	8-729-201-05	TRANSISTOR 2SC2878-B
Q405	8-729-201-05	TRANSISTOR 2SC2878-B
Q406	8-729-606-32	TRANSISTOR 2SC2603
Q407	8-729-100-13	TRANSISTOR 2SC2001
Q430	8-729-663-47	TRANSISTOR 2SC1364
Q501	8-729-902-11	TRANSISTOR 2SC2021
Q502	8-729-993-72	TRANSISTOR 2SA937
Q503	8-729-902-11	TRANSISTOR 2SC2021
Q504	8-729-993-72	TRANSISTOR 2SA937
Q505	8-729-902-11	TRANSISTOR 2SC2021
Q506	8-729-993-72	TRANSISTOR 2SA937
Q507	8-729-902-11	TRANSISTOR 2SC2021
Q508	8-729-993-72	TRANSISTOR 2SA937

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- Items marked " ● " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q511	8-729-663-47	TRANSISTOR 2SC1364
Q512	8-729-201-52	TRANSISTOR 2SA1015
Q513	8-729-201-52	TRANSISTOR 2SA1015
Q514	8-729-201-52	TRANSISTOR 2SA1015
Q515	8-729-224-61	TRANSISTOR 2SK246
Q516	8-729-606-32	TRANSISTOR 2SC2603
Q517	8-729-606-32	TRANSISTOR 2SC2603
Q518	8-729-224-61	TRANSISTOR 2SK246
Q701	8-729-382-63	TRANSISTOR 2SC1826
Q702	8-729-141-43	TRANSISTOR 2SD414
Q703	8-729-141-43	TRANSISTOR 2SD414
Q704	8-729-382-63	TRANSISTOR 2SC1826
Q705	8-729-141-43	TRANSISTOR 2SD414
Q706	8-729-382-63	TRANSISTOR 2SC1826
Q707	8-729-377-12	TRANSISTOR 2SA771
Q708	8-729-116-42	TRANSISTOR 2SD1164
Q801	8-729-902-11	TRANSISTOR 2SC2021
Q802	8-729-993-72	TRANSISTOR 2SA937
Q803	8-729-993-72	TRANSISTOR 2SA937
Q804	8-729-993-72	TRANSISTOR 2SA937
Q805	8-729-993-72	TRANSISTOR 2SA937
Q806	8-729-993-72	TRANSISTOR 2SA937
Q807	8-729-902-11	TRANSISTOR 2SC2021
Q808	8-729-993-72	TRANSISTOR 2SA937
Q809	8-729-902-11	TRANSISTOR 2SC2021
Q810	8-729-993-72	TRANSISTOR 2SA937
Q811	8-729-902-11	TRANSISTOR 2SC2021
Q851	8-729-663-47	TRANSISTOR 2SC1364
Q855	8-729-663-47	TRANSISTOR 2SC1364
Q856	8-729-663-47	TRANSISTOR 2SC1364
Q857	8-729-663-47	TRANSISTOR 2SC1364
Q859	8-729-663-47	TRANSISTOR 2SC1364
Q861	8-729-663-47	TRANSISTOR 2SC1364
Q870	8-719-700-04	DIODE NJL5143EL
Q901	8-729-902-11	TRANSISTOR 2SC2021
Q902	8-729-902-11	TRANSISTOR 2SC2021
Q903	8-729-902-11	TRANSISTOR 2SC2021
Q904	8-729-993-72	TRANSISTOR 2SA937
Q905	8-729-993-72	TRANSISTOR 2SA937
Q906	8-729-993-72	TRANSISTOR 2SA937
Q907	8-729-993-72	TRANSISTOR 2SA937
Q908	8-729-988-12	TRANSISTOR 2SA881
Q909	8-729-954-51	TRANSISTOR 2SC1545
Q910	8-729-110-21	TRANSISTOR PH102
Q911	8-729-110-21	TRANSISTOR PH102

ELECTRICAL PARTS

Ref.No.	Part No.	Description				
Q951	8-729-988-12	TRANSISTOR 2SA881				
Q952	8-729-988-12	TRANSISTOR 2SA881				
Q953	8-729-967-32	TRANSISTOR 2SC2673				
Q954	8-729-967-32	TRANSISTOR 2SC2673				
Q955	8-729-905-52	TRANSISTOR 2SD1055				
Q956	8-729-902-11	TRANSISTOR 2SC2021				
Q957	8-729-993-72	TRANSISTOR 2SA937				
Q958	8-729-902-11	TRANSISTOR 2SC2021				
Q959	8-729-902-11	TRANSISTOR 2SC2021				
Q981	8-729-967-32	TRANSISTOR 2SC2673				
Q982	8-729-967-32	TRANSISTOR 2SC2673				
Q983	8-729-993-72	TRANSISTOR 2SA937				
R17	⚠.1-247-101-00	CARBON	56	5%	1/4W	F
R26	⚠.1-247-101-00	CARBON	56	5%	1/4W	F
R51	1-202-591-00	COMPOSITION	5.6K	5%	1/2W	
R64	⚠.1-247-107-00	CARBON	100	5%	1/4W	F
R103	⚠.1-247-107-00	CARBON	100	5%	1/4W	F
R301	1-244-913-00	CARBON	47K	5%	1/2W	
R302	1-244-851-00	CARBON	120	5%	1/2W	
R303	1-244-890-00	CARBON	5.1K	5%	1/2W	
R306	1-244-899-00	CARBON	12K	5%	1/2W	
R385	1-244-869-00	CARBON	680	5%	1/2W	
R386	1-244-875-00	CARBON	1.2K	5%	1/2W	
R387	1-244-875-00	CARBON	1.2K	5%	1/2W	
R388	1-244-869-00	CARBON	680	5%	1/2W	
R394	1-244-881-00	CARBON	2.2K	5%	1/2W	
R397	1-214-765-00	METAL	33K	1%	1/4W	
R401	1-244-913-00	CARBON	47K	5%	1/2W	
R402	1-244-851-00	CARBON	120	5%	1/2W	
R403	1-244-890-00	CARBON	5.1K	5%	1/2W	
R406	1-244-899-00	CARBON	12K	5%	1/2W	
R494	1-244-881-00	CARBON	2.2K	5%	1/2W	
R497	1-214-765-00	METAL	33K	1%	1/4W	
R550	1-207-615-00	METAL PLATE	0.33	10%	2W	
R551	⚠.1-212-950-00	FUSIBLE	4.7	5%	1/2W	F
R552	⚠.1-212-982-00	FUSIBLE	100	5%	1/2W	F
R553	⚠.1-247-188-00	CARBON	4.7	5%	1/2W	F
R590	⚠.1-212-950-00	FUSIBLE	4.7	5%	1/2W	F
R650	1-207-615-00	METAL PLATE	0.33	10%	2W	
R651	⚠.1-212-950-00	FUSIBLE	4.7	5%	1/2W	F
R653	⚠.1-247-188-00	CARBON	4.7	5%	1/2W	F
R690	⚠.1-212-950-00	FUSIBLE	4.7	5%	1/2W	F
R701	⚠.1-212-982-00	FUSIBLE	100	5%	1/2W	F
R710	⚠.1-247-231-00	CARBON	430	5%	1/2W	F
R712	⚠.1-212-946-00	FUSIBLE	3.3	5%	1/2W	F

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description				
R713	⚠.1-212-934-00	FUSIBLE	1	5%	1/2W	F
R714	⚠.1-247-228-00	CARBON	330	5%	1/2W	F
R721	⚠.1-212-946-00	FUSIBLE	3.3	5%	1/2W	F
R724	⚠.1-212-946-00	FUSIBLE	3.3	5%	1/2W	F
R727	⚠.1-202-851-00	COMPOSITION	3.3		1/4W	F
R728	⚠.1-202-851-00	COMPOSITION	3.3		1/4W	F
R933	⚠.1-247-184-00	CARBON	2.2	5%	1/2W	F
R965	1-244-847-00	CARBON	82	5%	1/2W	
R966	1-244-847-00	CARBON	82	5%	1/2W	
R984	1-244-830-00	CARBON	16	5%	1/2W	
RV1	1-226-236-00	RES, ADJ, CARBON 10K				
RV2	1-226-238-00	RES, ADJ, CARBON 50K				
RV51	1-226-236-00	RES, ADJ, CARBON 10K				
RV101	1-226-236-00	RES, ADJ, CARBON 10K				
RV102	1-226-239-00	RES, ADJ, CARBON 100K				
RV201	1-226-238-00	RES, ADJ, CARBON 50K				
RV202	1-226-234-00	RES, ADJ, CARBON 2K				
RV301	1-228-646-00	RES, VAR, CARBON 50K/50K, REC LEVEL				
RV302	1-224-645-XX	RES, ADJ, CARBON 10K				
RV303	1-224-647-XX	RES, ADJ, CARBON 47K				
RV401	1-228-646-00	RES, VAR, CARBON 50K/50K, REC LEVEL				
RV402	1-224-645-XX	RES, ADJ, CARBON 10K				
RV403	1-224-647-XX	RES, ADJ, CARBON 47K				
RV501	1-228-649-00	RES, VAR, SLIDE 250K, VOLUME				
RV502	1-228-648-00	RES, VAR, CARBON 50K/50K, TREBLE				
RV503	1-228-648-00	RES, VAR, CARBON 50K/50K, BASS				
RV504	1-228-647-00	RES, VAR, CARBON 250K, BALANCE				
RV505	1-226-431-00	RES, ADJ, CARBON 10K				
RV506	1-226-431-00	RES, ADJ, CARBON 10K				
RV851	1-226-239-00	RES, ADJ, CARBON 100K				
RV901	1-226-238-00	RES, ADJ, CARBON 50K				
RY301	1-515-323-00	RELAY				
RY401	1-515-323-00	RELAY				
S301	1-552-819-00	SWITCH, SLIDE (TAPE SELECT)				
S302	1-514-524-00	SLIDE SWITCH (ISS)				
S601	1-554-148-00	SWITCH, PUSH (5 KEY)				
S701	⚠.1-553-747-00	SWITCH, SEESAW (AC POWER)				
S851	1-553-856-00	SWITCH, KEY BOARD (AUX)				
S852	1-553-856-00	SWITCH, KEY BOARD (PHONO)				
S853	1-553-856-00	SWITCH, KEY BOARD (TAPE)				
S854	1-553-856-00	SWITCH, KEY BOARD (TUNER)				
S856	1-553-856-00	SWITCH, KEY BOARD (TUNING/-)				
S857	1-553-856-00	SWITCH, KEY BOARD (TUNING/+)				
S858	1-553-856-00	SWITCH, KEY BOARD (FM/AM)				
S859	1-553-856-00	SWITCH, KEY BOARD (DISPLAY)				

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S860	1-553-856-00	SWITCH, KEY BOARD (COUNTER RESET)
S861	1-553-856-00	SWITCH, KEY BOARD (MEMERY)
S862	1-553-856-00	SWITCH, KEY BOARD (POWER ON/STANDBY)
S863	1-553-856-00	SWITCH, KEY BOARD (SLEEP)
S864	1-553-856-00	SWITCH, KEY BOARD (TIMER CHECK)
S867	1-553-856-00	SWITCH, KEY BOARD (4)
S868	1-553-856-00	SWITCH, KEY BOARD (3)
S869	1-553-856-00	SWITCH, KEY BOARD (2)
S870	1-553-856-00	SWITCH, KEY BOARD (1)
S872	1-553-856-00	SWITCH, KEY BOARD (7)
S873	1-553-856-00	SWITCH, KEY BOARD (6)
S874	1-553-856-00	SWITCH, KEY BOARD (5)
S875	1-553-856-00	SWITCH, KEY BOARD
S901	1-552-532-00	SWITCH, PUSH (CASSETTE DET)
S902	1-552-532-00	SWITCH, PUSH (ERASE PROOF)
S903	1-552-532-00	SWITCH, PUSH (TAPE SELECT)
S904	1-552-532-00	SWITCH, PUSH (TAPE SELECT)
S905	1-553-856-00	SWITCH, KEY BOARD (STOP)
S906	1-553-856-00	SWITCH, KEY BOARD (REW)
S907	1-553-856-00	SWITCH, KEY BOARD (FF)
S908	1-553-856-00	SWITCH, KEY BOARD (FWD)
S909	1-553-856-00	SWITCH, KEY BOARD (REC)
S910	1-553-856-00	SWITCH, KEY BOARD (PAUSE)
S911	1-553-856-00	SWITCH, KEY BOARD (REC MUTE)
T1	1-404-327-00	TRANSFORMER, DISCRIMINATOR
T2	1-404-328-00	TRANSFORMER, DISCRIMINATOR
T301	1-464-110-00	OSCILLATOR UNIT, BIAS
T701	⚠.1-447-416-00	TRANSFORMER, POWER (SMALL)
T702	⚠.1-447-417-00	TRANSFORMER, POWER (LARGE)
TH901	1-800-202-XX	THERMISTOR S-10K

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

TROUBLE CHECKS

The following checks will assist in the correction of most problems which you may encounter with your set. Should any problem persist after you have made these checks, consult your nearest Sony service facility.

Before going through the check list below, first pay attention to the following fundamental points.

- The power cord must be connected firmly.
- The speaker connection must also be firm.
- The POWER switch on the rear must be set to ON.
- The POWER ON/STAND BY key must be pressed to ON.

RADIO PROGRAM RECEPTION

The STEREO indicator flickers or the SIGNAL indicator do not illuminate.

- Tune in the station accurately.
- Adjust the antenna.

The desired station cannot be tuned in with the automatic tuning system.

- The signal strength is too weak for automatic tuning.

Adjust the antenna for optimum reception and tune in the station with the manual tuning system.

The desired station cannot be tuned in with the manual tuning system.

- The signal strength is too weak.

Adjust the antenna for optimum reception or press to release the STEREO/MUTING switch.

Tuning cannot be done correctly when the station preset button is pressed.

- Memorize the frequency correctly.

Severe hum or noise

- Tune in the station accurately.
- Use shielded antenna leads.
- Avoid long horizontal runs of antenna lead.
- Keep antenna leads away from transformers or motors, and at least 3 meters (10 feet) from TV sets and fluorescent lights.
- Adjust the antenna.
- Connect the ground wire.
- When listening to FM stereo programs, releasing the STEREO/MUTING switch will provide less noise in the monaural mode.

BUILT-IN CASSETTE DECK OPERATION

The function keys do not activate right after the POWER ON/STAND BY key pressed to ON.

- Logic-controlled function keys operate approximately 4 seconds after the POWER ON/STAND BY key is pressed.

The function keys do not activate.

- The cassette holder is not fully closed.
- No cassette in the cassette holder.

The ● key does not activate.

- The tab is removed from the cassette. See page 15.
- The TAPE function selector key is engaged.

Tape does not move even when the ▶ key is pressed.

- The tape is wound completely.
- The ❚❚ key is pressed.

Recording or playback cannot be made or there is a decrease in sound level.

- Dirty heads.
- Magnetic contamination on the record/playback head.
- Improper setting of the function selector keys.

Excessive wow or flutter, or sound drop-out

- Contamination of the capstan or pinch roller.

Insufficient erasure

- Magnetic contamination of the erase head.

Increase of noise or erasure of high frequencies

- Magnetic build-up on the head.

Unbalanced tone in higher frequencies

- Improper setting of the DOLBY NR switch. If recorded with the switch set to ▬ ON, play back with it at ▬ ON. If recorded with it set to □ OFF, play back with it at □ OFF.
- A TYPE II or TYPE IV cassette which does not have METAL tape detector slots is being used with the TAPE SELECT switch set to AUTO.

OTHERS

The time display does not change to the tape counter when the cassette deck function key is pressed.

- The time display does not change for approximately 5 seconds after it is selected by the DISPLAY key. Press the DISPLAY key twice to change the display to the tape counter.

The time display shows "0000" and the previous timer setting and station memory are cancelled.

- There was a power interruption for more than 30 minutes or the set has been left with the power cord unplugged.

Set the clock and the timer and memorize the stations again.

No audio

- Slide the VOLUME control to the right.
- Check the function selector key setting.

No audio from one channel or unbalanced left and right volume

- Adjust the BALANCE control.
- Check the speaker connections of the inoperative channel.

Reversed left and right sound

- Check the speaker cord connection and speaker location.

Lack of bass sound or apparently imprecise physical location of musical instruments

- Check the speaker connection for proper phasing.

Severe hum or noise

- Use shielded connecting cords.
- Keep the connecting cords away from transformers or motors and at least 3 meters (10 feet) from TV sets and fluorescent lights.
- Ground the receiver.
- Connect the ground wire of the turntable system to the terminal of the receiver.

Rustling noise

- Make secure connections.
- Wipe the plugs and jacks with a cloth lightly dampened with methanol.

ELECTROLYTIC CAPACITORS

	RATING				→ : Use the high voltage rated one.	
CAP. (μF)	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

			RATING				
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

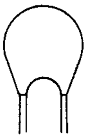
0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

			RATING	→ : Use the high voltage rated one.	
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

	RATING										
CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.
	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.		PART No.	PART No.	PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				



TANTALUM CAPACITORS

	RATING			→: Use the high voltage rated one.			
CAP. (μF)	3.15 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	25 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS

	RATING					
CAP. (μF)	3 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/4 WATT CARBON RESISTORS

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

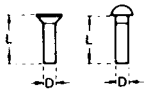
1/8 WATT CARBON RESISTOR

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

HARDWARE NOMENCLATURE

Screw: – P 3 x 10

L: Length in mm
D: Diameter in mm
Type of head
Indicated slotted-head only.
Unless otherwise indicated, it means cross-recessed head (Phillips type).

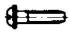
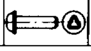
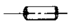
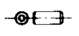
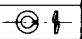


Nut, Washer, Retaining ring:

N 3

Diameter of usable screw or shaft
Reference designation

Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazier-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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